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The King and Railways

WHEN our present King, as Duke of York, attended the centenary of the opening of the Stockton & Darlington Railway in July, 1925, he said of railways that "the facilities they afford and the vitally important services they daily render to the community, have become so commonplace in these days that we barely give a passing thought to their influence on our lives. Their faithful services bring us the necessities of life; their speed, reliability, and cheapness have combined to break down the barriers of distance, so that now we think mainly of the time railways have helped to save, and thus to lengthen life. For those who live in congested areas they provide an easy means of escape to the healthful breezes of the seashore or the clean, pure air of the country. We are able to derive no little amusement from the picture of a man riding a horse and bearing a flag galloping before the first train, the same which is reported to have travelled at 'the terrific speed of 15 miles an hour.' It is interesting to remark, however, that the picture, however ludicrous it may appear now, faithfully represented an incident which took place within the lifetime of quite a few people in this country today. We are proud of the fact that we gave the world her railways. Here especially we recall the fact that it was at a home in Northgate, Darling-

ton, in 1821, that Edward Pease, the railway statesman, and George Stephenson, the railway and locomotive engineer, met and laid the plan for the first railway in history, in which the locomotive was utilised. To the wisdom, energy, and foresight of these two famous North Countrymen the world owes a debt of gratitude impossible to repay."

* * * *

L.N.E.R. Meeting

Stockholders at the London & North Eastern Railway meeting last Friday were in an appreciative mood, and cordially approved the frank statement of the Chairman as to the relative positions of the stockholders and employees, and as to the allocation of the sums due to the company for past overpayments to local rates and to freight rebate funds. Wages and conditions of labour have been improved since March, 1931, to an extent which has cost the four main-line railways £2,500,000 a year, but the financial position of the companies is at the end of 1936 still worse than it was at December 31, 1930, on the accounts of which year the decision of the National Wages Board in March, 1931, was based. The possibility of some amendment of the Road and Rail Traffic Act, 1933, in order to secure real equality in competition, was freely discussed, and one stockholder vividly contrasted the saving to the nation in man power and imported fuel which would be provided by the railways in war time with the waste in both these respects which would be involved in relying on the roads. Some interesting remarks were made by another stockholder as to the provision of grain silos which he had recommended in the past in order to secure loads in bulk, and also as to the unfortunate change in grain marketing conditions. The way in which railway companies are defrauded by farmers who hire grain sacks from them at a ridiculously low charge and then send consignments by road was also touched upon.

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The Week's Traffics

Traffic receipts of the four main-line railways for the past week show a total increase over the corresponding week of last year of £74,000, comparing with an increase of £154,000 in the previous week. For the corresponding week in 1936 merchandise receipts showed satisfactory increases except on the Southern, but passenger train gains were only moderate, and the L.M.S.R. and Great Western had increases in coal of £8,000 and £4,000, respectively. Gross traffics of the four companies for the year to date amount to £25,054,000, an increase of £403,000 or 1.63 per cent. Passenger train traffics are £234,000 up, and merchandise receipts show a net improvement of £238,500, but coal class earnings are £69,500 down. The Great Western has an increase of £17,000 in coal, and the L.M.S.R. coal decrease is now only £1,000.

	9th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	%
L.M.S.R. ..	+ 12,000	+ 2,000	+ 18,000	+ 32,000	+ 218,000	+ 2.17
L.N.E.R. ..	+ 11,000	+ 7,000	+ 1,000	+ 19,000	+ 63,000	+ 0.84
G.W.R. ..	+ 3,000	+ 6,000	+ 10,000	+ 19,000	+ 95,000	+ 2.33
S.R. ..	+ 5,000	- 2,000	+ 1,000	+ 4,000	+ 27,000	+ 0.89

On the Great Northern Railway (Ireland) the past week's traffic showed an increase of £250, but for the year to date the total is £9,200 down.

* * * *

Chinese National Railways in 1934-35

The annual report of the Chinese National Railways, just received, is for the financial year ended June 30, 1935, instead of as previously for a calendar year. It is a very comprehensive volume, carefully compiled, and replete with statistical tables and diagrams covering the whole

7,260 km. of line operated. The following table shows some of the principal figures in thousands of dollars:—

	1933-34	1934-35	Increase or Decrease
Gross earnings ..	152,323	167,522	+ 15,199
Working expenses ..	106,355	110,736	+ 4,381
Net revenue ..	45,968	56,786	+ 10,818
Net income debits ..	- 37,989	- 28,940	+ 9,049
Surplus ..	7,979	27,846	19,967

The increase in gross revenue was therefore an increase of practically 10 per cent. over the former year, whereas working expenses were only just over 4 per cent. higher. Passenger and freight earnings represented 95 per cent. of the total, and passenger traffics rose by \$312,766 and goods by \$14,423,817. The operating ratio improved from 69.8 to 66.1 per cent., a very creditable figure. The average speeds of all passenger trains was 32 m.p.h., and of goods trains 24 m.p.h. The average engine mileage, excluding shunting, worked out at 29,672, well over 2,000 miles higher than in the previous twelve months. The total number of employees was 129,164, i.e., 18 per km. of line, or 307 per 100,000 train-km. The operating revenue per km. of line worked out at \$23,073. The lines comprising the National system are the Peiping-Hankow, Nanking-Shanghai, Peiping-Liaoning (Mukden), Kiaochow-Tsinan, Tientsin-Pukow, Kaifeng-Honan, Shanghai-Hangchow-Ningpo, Peiping-Suiyuan, Taokow-Chinghua, Nanchang-Kiukiang, Canton-Hankow (Southern section), Lung-Hai, Canton-Kowloon (Chinese section), Hupeh-Hunan, and Chengting-Taiyuan.

Overseas Railway Traffics

In the latest traffic return of the Central Argentine Railway the aggregate increase for the year to date has gone over the £1,000,000 mark. At this time a year ago the company's aggregate increase over the 1934-35 figures was £120,995. The Buenos Ayres Great Southern has added during the past fortnight £138,534 to its previous increase, and its aggregate increase to date now exceeds by about £120,000 the decrease which it showed at this time a year ago. On the Buenos Ayres & Pacific the gain during the past fortnight has been £45,399, on the Cordoba Central it has been £11,170, and on the Entre Rios £5,781. In contrast with the Leopoldina which is £33,732 to the good for the first ten weeks of 1937, the Great Western of Brazil records a decrease of £12,500 or 1,698 contos.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
Buenos Ayres & Pacific ..	36th	124,256	+ 23,316	3,160,403	+ 262,359
Buenos Ayres Great Southern ..	36th	226,799	+ 63,697	5,207,214	+ 545,894
Buenos Ayres Western ..	36th	56,079	+ 7,665	1,718,005	+ 131,787
Central Argentine ..	36th	187,029	+ 76,700	5,418,160	+ 1,058,190
Canal Pacific ..	9th	526,400	+ 18,600	3,983,600	+ 262,800
Bombay, Baroda & Central India	46th	217,950	- 37,425	8,024,025	+ 449,175

The Canadian Pacific has a net increase of £23,000 for the past two weeks.

De-bunking Railway History

As Mr. John Melville remarked in the discussion that followed the reading of Mr. Charles E. Lee's paper to the Permanent Way Institution last Monday (reported on page 513), the author by his exhaustive researches into the origin of railways had done some long overdue de-bunking. At last the ghost of Outram had been laid, for Mr. Lee had produced final evidence of the origin of the terms "tram" and "tramway." Another remarkable thing revealed by Mr. Lee was the fact that railways could be traced back to Babylonian times; but the matter that

caused most surprise was his exposure of the fact that the flanged wheel running on the plain rail long preceded the plateway, which was, indeed, specially designed to accommodate vehicles running on flat-tired wheels and thus formed probably the earliest type of road-rail device. How the term sleeper arose from the fact that the early rails were laid on "dormant" timbers, and many other interesting historic truths, made Mr. Lee's paper one of the most fascinating as well as one of the most important documents presented to the Permanent Way Institution.

The Importance of the Passenger

Unorganised and inarticulate, a stranger to collective bargaining and all the machinery of polite negotiation, the railway passenger may be excused for sometimes underestimating his own importance. He has been reminded of it in an address by Mr. M. W. Clement, President of the Pennsylvania Railroad, to the Chamber of Commerce at Harrisburg, Pa., on the occasion of the centenary of the first entry of a railway train into that city (on October 5, 1836). This address has been reprinted as a pamphlet, and we see that Mr. Clement was outspoken and emphatic in reminding labour of its joint obligation, with management, to the public at large; and of the need for sympathising with the long and broad view, rather than aiming for immediate but transitory benefits. If railways have to be operated under uneconomic conditions, their service will deteriorate; and although the public now has other means of transport at its disposal, it has bought its right to an efficient railway system. For, said Mr. Clement, the railways are "privately owned by the public at large," through the railway holdings of banks, insurance companies, educational institutions, and other bodies with which the welfare of the community is bound up.

Standardisation of German Block Working

The whole of the German main-line railway system has for very many years been worked on the space interval, or block principle; lines of light traffic rely on the Morse telegraph, while the remainder have lock-and-block apparatus, both on single and double lines. This apparatus is everywhere of the type known as Siemens and Halske, but actually invented by an engineer named Carl Frischen in 1870, and later adopted in several Continental countries. It has the peculiarity of being operated by alternating current, derived from hand worked magneto generators, except at the busiest signal boxes, where motor driven generators are used. Although the elements of this interesting and efficient lock-and-block system are more or less the same everywhere, they have been combined in different ways to meet the ideas of different railways, with the result that the practice was not the same on the different State systems—in Prussia, Baden, Saxony, &c.—of pre-war Germany, the variations of detail being analogous to those found with the Sykes block on different lines in this country. For some time past the Reichsbahn authorities have been engaged in framing standard principles to be used in all new installations, and a large measure of agreement has at length been reached. Existing equipment will not be altered until renewals or extensive alterations are necessary. It is interesting that the South German lines adopted a more complete lock-and-block, with a greater rigidity of working, than did the Prussian, forming a parallel to the conditions obtaining in Great Britain, where the plain block telegraph was used by the main lines to the North, while those in the south favoured the ideas of Sykes.

Streamlining—Useful and Otherwise

That the streamlining of locomotives has an advantage in reducing head resistance at high speed has been proved by the L.N.E.R. on the high-speed Silver Jubilee service, where the saving of fuel due to the streamlining equipment is about 10 per cent. But the speed qualification is important, and it is thus hardly surprising that in Japan, where 24 Pacific locomotives have been fully streamlined, the limitations on speed of a gauge of only 3 ft. 6 in., which permits maxima but little if at all above 60 m.p.h., have been such as to nullify the advantages of streamlining. It is estimated to have added 5 per cent. to the first cost of the Japanese engines; the inaccessibility of working parts under the streamlined casing for attention and repairs has increased maintenance costs; and the heat in the completely enclosed cabs, rising at times to between 120 and 130° F., has proved insupportable to the crews. However, both the troubles last-mentioned are capable of rectification and neither has been experienced with the L.N.E.R. engines, or, so far as can be ascertained, on the various streamlined classes in America. But why streamline at all for such speeds as those of Japan? A newspaper published in that country says of the Railway Minister responsible for the order that "he seized upon everything in vogue and was skilled in personal propaganda."

* * * *

Motor Trolley Maintenance in Rhodesia

The success which has attended the use since 1934 of motor trolleys for maintenance gangs on two branch lines of the Rhodesia Railways, has led to the decision to adopt the system on branches serving the Copperbelt in Northern Rhodesia during the current year. The trolleys, powered by a type of engine selected for its simplicity and reliability, haul two trailers, thus affording accommodation for a ganger, his complement of natives, and all the necessary tools. Before starting for the scene of the day's work, the ganger receives from the stationmaster controlling the section over which he is to travel a proceeding order to the site of the operations. On arrival, the trolley and trailers are removed from the track. All trolleys are prominently numbered, and the staffs of trains running over sections where the gangs are at work have endorsed upon their orders the identification numbers of the trolleys they will cross, and the points at which they will cross them. Before returning or moving on, the ganger must again receive authorisation from the controlling station, with which he communicates by means of a portable phonopore, carried as part of his equipment. Wherever possible, gangers are now accommodated at stations, giving the opportunity for a little more social life and facilities for the education and care of children.

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Steam Railcar Experiments

Resulting from the effects of the present economic policy on the raw material and natural fuel position in Germany, the Reichsbahn is carrying out extensive experiments with steam railcars to see whether units of this type can be developed to maintain the super-speed services now operated by the diesel trains. The basis on which the new designs are being evolved is the handful of cars with Doble oil-fired boilers and two-cylinder compound engines built into the bogie, but for future vehicles it is considered essential that solid fuel of one or other of the indigenous types should be used. Further conditions are that the steam plant shall be fully automatic in its operation and that the car shall be driven by one man in either direction and from the car itself or from a driving trailer. Despite

the difficulties of such a task it is expected that equipment to meet these conditions will be erected in a double-bogie car shortly. The principal difficulty to be overcome lies in the automatic regulation of solid-fuel firing. A number of questions relating to this still await solution, but some encouraging results have been obtained on a test plant with finely-broken coke. The other main difficulties are finding a place for the boiler plant and keeping down the weight to a reasonable figure.

* * * *

Rolling Stock Maintenance in Italy

Improved user of rolling stock on the Italian State Railways has been achieved by technical progress in construction, and by a rationalised scheme of maintenance akin to that of the locomotive department. The increasing proportion of steel passenger and freight vehicles, in particular, has substantially reduced the numbers of wagons and coaches out of service for repairs. In 1927-8 wooden framed stock accounted for 86 per cent. of the freight total, whereas by 1935-6 it had been reduced to 55 per cent. Concurrently, the proportion of freight vehicles out of service fell from 9 per cent. to 1 per cent. Passenger accommodation has been improved by the rapid disappearance since 1927-8—when they amounted to 56 per cent. of the total—of non-bogie coaches. These, in 1935-6, had fallen to 6 per cent., and the programme of new construction has caused passenger stock out of service to be reduced in the same period from 27 per cent. to 8 per cent. Temporary withdrawals necessitated by hot boxes have been minimised by improved design of these components, aimed at excluding water, preventing loss of oil, and increasing the efficiency of the greased packing. As a result, not only has oil consumption been halved since the two years 1927 and 1928, but overheating has been reduced from 3.67 to 0.59 cases per million axle-km. run by the stock as a whole.

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Reclaimed Material Effects Economies

Mr. L. A. Downs, President of the Illinois Central System, Chicago, recently described reclamation of material as one of the most remarkable modern developments in railway shop practice. It was, he said, formerly necessary to scrap practically all worn and defective parts of locomotives and rolling stock, but the development of welding processes for iron and steel parts, and later the use of alloys to match any parent metal, brought about a revision of methods, leading to considerable economies. By renewing worn parts instead of buying new ones, an average saving of £3 19s. 5d. is effected on each coupler, some 30,000 of which have to be renewed every year on the Illinois Central, whilst £5 7s. 11d. is saved on 6,000 side frames in each year. It is the same with many other component parts, and the number of such which are nowadays repaired or renewed by the welding process amounts to some 500. Also, in dismantling cars and locomotives, parts which formerly went to the scrap heap are now claimed and sent to the stores to be used in place of new parts. Improved methods of water treatment and the regular blowing down of boilers on the road and at the shops, remove the impurities and prevent scale and corrosion, thus extending the life of boilers, tubes, fireboxes, staybolts and other parts. The service life of fluetubes has been doubled, increasing from 6 to 12 years on the average, by these methods, whilst the average service life of fireboxes has been lengthened by 6 years or more. Prior to 1929, 115 fireboxes were rebuilt each year on the Illinois Central, but since that time the average has been 15 a year.

Standing Committee on Mineral Transport

THE recent observations of Mr. Sherrington at the Institute of Transport regarding the marketing of coal in this country (commented upon in our February 12 issue) make it opportune to recapitulate the main conclusions and recommendations of the Standing Committee on Transport to which he referred. It may be recalled that, following on the recommendation of the Royal Commission on Transport, the committee was appointed early in 1927 to review the equipment available for the transport of coal from the coalfields to the ports and internal markets of the country, and the methods of conducting such transport. The committee was also directed to devise means of promoting such improvement in that equipment and its use as would lead to the greatest efficiency and economy in transport, and would be of mutual advantage to the coal mining industry and the transport agencies. After extensive enquiries, the committee issued a report in October, 1929, outlining the essential difference between the systems of mineral transport in Great Britain and on the Continent, and indicating that, in its judgment, the adoption of Continental practice was not feasible. Proposals were put forward, however, which were claimed to be consistent with, and making progress towards, a fuller solution of the problem, and would effect an improvement at each stage in the existing arrangements, thereby ensuring decreases in mineral transport and handling costs. The principal recommendations were that, where practicable, immediate steps should be taken to reconstruct the principal loading and unloading terminals which could not accommodate 20-ton wagons: that, provided the reconstruction work had been or was in process of being carried out by January 1, 1932, at the majority of such terminals, no wagons of smaller capacity than 20 tons should be constructed for mineral transport unless permission was given to meet special circumstances: that immediate steps should be taken to secure the pooling of wagons: and that in certain areas in England and Wales the siding rent on railway companies' and private owners' wagons should be increased.

Subsequently, the Minister of Transport announced in the House of Commons on December 17, 1930 that, after negotiations with representative traders' associations, the railway companies had agreed that, in approved cases, they were prepared to carry out the adaptation of terminal facilities at collieries and private sidings to make them suitable for 20-ton wagons, by arrangement with the firms concerned and with the assistance of grants of interest under Part I of the Development (Loans, Guarantees and Grants) Act, 1929. No information has since been published as to the extent, if any, to which collieries took advantage of this offer, but during the ensuing six years the railway companies have been steadily adapting their facilities for dealing with high-capacity wagons. The G.W.R. has stated, for example, that it could deal with the whole of the present South Wales coal shipments through 20-ton appliances if desired. It is understood that the committee has held a number of meetings for the purpose of deciding the best method of implementing its recommendations, but, owing to the many conflicting interests involved, it has been impossible to reach agreement upon restricting the construction of mineral wagons to those of 20 tons capacity or over. Similarly no progress has been achieved by the committee in regard to increased siding rent charges or the pooling of mineral wagons, although the rationalisation of collieries now in progress is effecting improvements in the latter direction.

While the labours of the committee have thus been

abortive to a large extent, there has been a material change in the situation since the publication of its report. Figures quoted by the committee showed that on January 31, 1928, there were over 578,000 privately owned coal and coke wagons registered to run on railway companies' lines in Great Britain, of which colliery proprietors owned about 420,000, and coal factors and merchants about 130,000. In the subsequent nine years, however, a considerable number of the smaller and older wagons has been broken up, the equivalent of 5,000 20-ton wagons being broken up under one scheme alone. Further, as orders have been issued that privately owned wagons not bearing "generally repaired" plates will not be allowed to run in main line traffic after December 31 next; that wagons not fitted with brake levers on both sides will not be allowed to run after December 31, 1938; and that the regulations regarding converted private owners' wagons will result in a substantial number being withdrawn from traffic, there has been a general tendency on the part of wagon owners to scrap the older types rather than incur the heavy cost of repairs and alterations. It appears to be generally agreed that the use of high-capacity wagons should be encouraged; for shipment traffic their use is obviously desirable and is slowly increasing. Very little use of such wagons is being made in the inland trade, however, owing to the circumstances in which the marketing of coal is conducted, and it would appear that for some considerable time 12-ton mineral wagons will continue to be used for this purpose.

* * * *

Solution of Road-Rail Problem

IN his presidential address on January 21 to the Glasgow Railway Lecture and Debating Society, Mr. D. E. Sewell, Goods Manager, Southern Scottish Area, L.N.E.R., discussed the perennial question of how to get a bigger share of a cake that is too small to satisfy all who want it. We refer, of course, to the chronic fight between rail and road to provide transport service for the community, or, more correctly, to derive an adequate income from those members of the community who can afford to pay for transport. Mr. Sewell quoted remarkable figures to indicate the extent to which railway facilities are under-utilised, and made a suggestion for getting them better used by reducing railway freight rates. His argument was of the same kind as that used by Mr. W. V. Wood in a paper he read last year to the Institute of Transport, when he too pointed out that once sufficient traffic were obtained to meet the fixed railway charges, which are the heaviest item of railway expenditure, the cost of handling additional traffic was almost negligible.

We commented on the matter at the time, and referred to Mr. Wood's simile of the water company whose charges represented mainly the cost of the catchment area, reservoirs, and pipes, and in only a minor degree the actual quantity of water supplied. If, to make an existing railway pay, its passenger trains must carry a minimum load of say 100 passengers each, then the addition of one passenger meant a negligible addition to the railway costs, just as normally an extra thousand gallons of water cost practically nothing to a water company. Mr. Sewell pointed out that railways could afford to handle much greater tonnages than at present for little more than the extra out-of-pocket costs which, as he said, in most cases are negligible. He drew attention to the fact that some of the most prosperous commercial firms today are those which have reduced their prices to a minimum, and utilise a huge output or turnover to bring their overhead charges per unit of output to the lowest level. Mr. Sewell made the tangible suggestion, *i.e.*, one of which serious

notice seems to be demanded, that an estimate should be made of how much traffic, say at Class 6 rates, it would be necessary for the railways to carry in order to earn not less than their standard revenue after meeting working expenses. If, he said, the railways had such a figure as a datum line, and began greatly to reduce their rates, regardless of classification, to that level, the road-rail problem might be solved—solved, perhaps, so far as the railways were concerned—but as the railways benefited, so the road-rail problem, from the point of view of the providers of road transport, would be intensified.

This worrying problem of how to get more traffic for the railways is nearly always focussed on the idea of scarcity; whereas the days of scarcity are gone, thanks to the machine, and the problem of how to produce enough is converted into one of how to restrict production. With this false notion that there is still not enough to go round, it is generally assumed that the railway shareholder, and those who derive their incomes from railway employment, can benefit only at the expense of those who provide road or other forms of transport independently. We often wonder how long it will be before people become conscious of the fact that modern machine industry has transformed the world from a condition of scarcity to one of at least potential abundance, and that it is absurd not to benefit by it. If and when that consciousness does dawn, and the people at last decide to enjoy their inherited abundance, there will be so much demand for goods and services that all the energies of producers (including those of transport) will be absorbed in supplying the demand with the maximum efficiency. Then, quite automatically, Mr. Sewell's vision will be fulfilled of "full and complete co-ordination between road and rail, each working in its proper economic sphere to provide transport for the nation."

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Restaurant Car Tariffs

SINCE the war the restaurant car has become an increasingly essential part of the facilities afforded by the British railways. Practically every long-distance train includes a restaurant car, and the facility is also provided on many of the day and half-day excursions. A development of recent years has been the provision of refreshment or buffet cars on short-distance expresses where the business offering is not sufficient to justify the service of *table d'hôte* meals. Generally speaking, the catering facilities on restaurant cars have afforded satisfaction to the travelling public, on account of their convenience, quality, and the high standard of service. There have, however, been frequent expressions of dissatisfaction with the prices charged for meals, namely, 5s. for dinner; 3s. to 4s. for luncheon; and 3s. 6d. for breakfast. These prices, particularly that charged for dinner, are beyond the means of a large proportion of passengers. On the other hand, there is much to be said for the viewpoint of the railway companies that the provision of restaurant car facilities is a costly arrangement, involving the construction and haulage of special vehicles, together with a heavy wages bill, and that, on these grounds, no fair comparison can be made with the tariffs in operation in ordinary restaurants.

In 1932 the L.N.E.R. introduced cheaper variations to the 5s. *table d'hôte* dinner, and recent concessions made by the G.W.R. constitute yet another step towards meeting the demand for restaurant car facilities better adjusted to the means of the average passenger. For many years the G.W.R. has offered a "short" breakfast at 2s. 6d. as the alternative to the full meal at 3s. 6d. This alternative meal has now been withdrawn and *à la carte*

facilities substituted so that passengers not requiring the set meal are at liberty to make their own choice from the numerous dishes appearing on the menu, each of which is separately priced. Another important concession is the introduction of a "short" dinner at 3s. 6d., as alternative to the full-course meal at 5s. This is a particularly welcome innovation which will go far towards meeting the demand for a lighter evening meal. Many passengers do not desire the full-course meal at 5s., especially in the heat of summer, and the alternative now offered will be widely welcomed. The practice, previously in operation on many G.W.R. trains, of serving a "short" luncheon at 2s. 6d., in addition to the full-course meal at 3s. or 3s. 6d., is being extended to all services. Menus have also been made more varied by giving passengers a wider choice of entrées and other dishes, while a local flavour is introduced by serving Cornish and Devonshire cream on certain trains running to the West Country.

In THE RAILWAY GAZETTE of May 26, 1933, it was represented that high charges prevented many passengers from using the restaurant car facilities, and it was urged that by meeting the requirements of these passengers the companies would be enabled to secure a much greater return upon many of their cars and, at the same time, afford a larger measure of satisfaction to the travelling public. It is satisfactory to know that a serious effort is now being made to make restaurant car prices more attractive, and the G.W.R. experiment will be watched with keen interest.

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High-Speed Trains in the U.S.A.

THE success of high-speed trains in the United States is encouraging the railways not merely to retain and augment such services but to aim at still faster travel with the longer trains that growing patronage dictates. This attitude of progress and experiment was reflected in the remarks of Mr. F. W. Conner, Assistant Passenger Traffic Manager of the Pennsylvania, at the recent annual meeting of the American Association of Passenger Traffic Officers (reported in the *Railway Age*). He considered speed to be the dominating factor in passenger transport (wherein he was supported by a vote taken among patrons of certain streamlined trains) and looked forward to the scheduling of averages between 90 and 100 m.p.h. including stops. This drastic proposal should be considered in the light of the report on air transport presented at the same meeting, which recorded an increase of 1,631 per cent. in travel on U.S.A. air routes between 1928 and 1935. Fortunately, while meeting the competition of airway speed by accelerating their services to new high levels, the railways are also improving upon their acknowledged advantage in the matter of accommodation. Lightweight construction means that the Hiawatha, for example, has been able to acquire an extra coach without increase of weight over its former eight-coach set. Railway motive power, too, is planned with ample reserves, for the seven-coach Mercury of the New York Central is to become a nine-coach train, without alteration in schedule. Faith in the future of speed development under the influence of progress in weight reduction has also been expressed by Mr. W. A. Newman, Chief Mechanical Engineer, Canadian Pacific Railway, in a recent address. Referring to the reduction compared with standard of 6,000 lb. per vehicle in the stock of the new C.P.R. streamlined lightweight trains, he said that a further saving of 15,000 lb. could probably be achieved with advantage, and, given advance in braking, with equal or improved standards of safety and comfort at any speeds within sight.

New types of passenger accommodation were discussed

at the American traffic officers' meeting; special and distinctive designs have been evolved for various high-speed services, culminating in the "hotel lounge" atmosphere of the Mercury, and the view was expressed that development should continue along lines of variety, rather than aim at setting up a standard. Distinctiveness does, indeed, appear to be a powerful factor in building up patronage of high-speed services, for when air-conditioned steam trains replaced the Burlington Zephyrs on their original run, there was a drop in traffic amounting to 30 per cent. at the end of 120 days. It is interesting that this is precisely the percentage of passengers on the high-speed trains in the north of the U.S.A. estimated to have been attracted from other forms of transport. Operating statistics of high-speed services continue to give satisfaction. Among the steam services, costs per train-mile of the C. & N.W. high-speed trains are averaging \$1.35, and of the C.M.St.P. & P. Hiawatha \$1.13 (for the four months June to September). The lowest diesel costs reported at the meeting were 51.3 cents for the Twin Zephyrs on the Chicago—Twin Cities service, where each unit ran 884 train-miles daily from June 1, 1935, to August 31, 1936. Another celebrated C.B. & Q. diesel service—the Mark Twain—cost 70 cents per train-mile. Well-filled trains are the rule on the high-speed runs; the Green Diamond of the Illinois Central averages 110 seats occupied out of a total of 120, and is frequently over-booked. On these occasions extra portions are worked as required.

* * * *

Failure of Locomotive Parts

THE designer of a locomotive is apt sometimes to overlook the fact that the finish of a part may fall far short of the standards on which he based his calculations. A highly polished finish on a test piece gives maximum physical properties for the material tested, whereas the actual finish may be such that the physical properties are perhaps less than half of what they should be. As a result the part fails in service, not because of poor design but on account of inferior finish. The matter is one of considerable importance to railways, as locomotive failures due to the fracture of a component part, faulty lubrication, or other similar causes, involve not only the cost of repairing the damaged part, but the loss of the services of the engine whilst the repair is being made. An article by Mr. F. H. Williams, Assistant Test Engineer of the Canadian National Railways, which recently appeared in the pages of our contemporary the *Railway Mechanical Engineer*, stresses the importance of good finish as a corollary of sound design and material. He cites the case of some finished parts purchased by manufacturers which did not accord with the kind of finish shown on the drawings, one result being that the failure of a part incurred an expense of over \$3,000 (£618) to the railway company.

One means of lubricating the big end of a connecting rod is by a grease cup on top of the rod, the rod itself carrying a boss drilled to form a cup, with a smaller drilled hole through which the grease can pass to the crankpin. Such a design, with a proper machine-tool finish—the edges of the drilled holes being rounded and having proper fillets and freedom from welds—will last indefinitely. Unfortunately, some of these factors may be overlooked, and, as a consequence, the rods fail. Fatigue cracks start from torn surfaces or tool marks, and the lack of a proper fillet or rounded edge may concentrate the stresses in such a way as to start them. Then again a hole may sometimes be drilled too large, and to remedy this it is filled in by welding and a smaller hole drilled through the welded metal. This is a questionable practice, since it frequently leaves conditions favourable to the starting of fatigue

cracks, and failures due to this cause are not infrequent. There is another feature which should be checked very closely and that is the drilling of holes. It is most important that the holes should be drilled in such a manner that there will be a smooth finish throughout their length, leaving them free from scoring or any form of roughness. There is also the question as to whether the radii for the rounded edges should be shown in detail on the drawings, and whether the finish of the walls of drilled holes should be specified in detail. In many cases, although the drawings do not specify these details, the shop practice covers them thoroughly, and this seems to be reasonably good practice.

It is of the utmost importance that locomotive rods should be machined with every regard for accuracy and quality of finish. Rods so treated as a rule give a long life in service, and the railway benefits to a large extent. The loss from poorly machined rods is very great, and it can be cut drastically by attention to the radii of finished edges, the elimination of tool and score marks, and perhaps slight changes in design. The designer should bear in mind that the possibility of a part failing because of tool marks or unfinished edges must be eliminated, and this can be done by designing the parts in as simple and plain a form as possible. The shop mechanic can finish almost any shape desired, but it is not always desirable that he should be asked to do this, for, as Mr. Williams points out, it makes it possible for a thoughtless mechanic to provide causes of failure through poor finish. Odd shapes require special care and should be avoided as much as possible. The necessity for proper finishing of the edges when drilling holes, and care in designing locomotive parts to avoid concentration of stresses, were points emphasised by Mr. Williams throughout.

* * * *

British Railways and the State

ON Wednesday, in the course of a leader on the railway position, *The Times* said it must be regarded as doubtful whether net earnings could be substantially improved as the result of further working economies. While some of the savings effected during the depression were likely to prove permanent, others were achieved only through postponing or drastically curtailing essential renewals, which will now cost more. "This year," *The Times* continued, "the L.M.S. will spend £750,000 more on material purchases solely because of the advance in prices. The other chairmen are also agreed that increased costs will accompany any further rise in traffics. But, in their anxiety to avoid raising the hopes of their stockholders too high, they have also refrained from placing emphasis on certain more favourable factors. Rearmament activity, for example, has yet to reach its peak; international trade is slowly expanding; and the Government's plan to revive industry in the Special Areas has now taken practical shape. From all these various sources, notwithstanding competition from the roads, some help will assuredly come to the railways, nor should the prospective Coronation influx be entirely overlooked in arriving at an estimate of their immediate prospects, though the long-term outlook still remains obscure. So long as economy and efficiency are the tests the railways must remain the framework of the country's transport. Their importance as a national necessity and as a national asset has indeed received tangible recognition from the Government in the shape of facilities for raising capital at lower rates than would normally be available to them. The Government, by assuming liability for the railways even to a limited extent, have established a principle no less important to the State than to the companies themselves."

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Balanced Slide Valves

Royal Victoria Station Hotel,
Sheffield 4, February 15

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The note on page 267 of your issue of February 12 is headed "A Slide Valve of 1899." The type of valve illustrated in Mr. Stanier's drawings on page 276 of the same issue was generally known as the Richardson balanced valve. It enjoyed a considerable use in the United States where it would appear to have originated, and its first adoption in this country would seem to have been on the Great Northern small Atlantics in 1898. Aspinall had it in mind at the same time and it followed a few months later on his "1400" class. Ivatt retained the valve for his standard Atlantics (driven of course by Stephenson valve gear) and it was doubtless one of the features contributing to the exceptionally free running for which the G.N. Atlantics have always been noteworthy.

Yours, &c.,

L. A. F.

Cost of Locomotive Renewals

London, March 7

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your issue of February 26 there is a report of the annual meeting of the Great Western Railway Company on February 24, at the conclusion of which are reported remarks and questions by various shareholders. Amongst these I notice that a shareholder drew attention to complete renewals of locomotives as opposed to heavy and light repairs. Similar statements figure in the accounts of the three other group railway systems. The shareholder in question appears to have assumed, not unreasonably, that the term "Complete Renewals" meant entirely new, as opposed to only partially renewed, locomotives; and to get some idea, if only an approximate one, of the average cost of such new locomotives he took the total figure for "Complete Renewals," viz., £426,043, and divided this figure by the number of "Complete Renewals," viz., 149, with a resulting average cost of £2,860 per locomotive. As no locomotives were ordered during the year from contractors, there are no contractors' costs with which to check or compare this figure, which, it was reasonably concluded, was the cost figure supplied by Swindon for complete new locomotives.

The reply of the Chairman, Sir Robert Horne, struck me as evasive and inconclusive; but if it meant anything at all, it was that the expenditure on renewals "covered work other than complete engines, and that it was not correct to assume that it related only to the 149 new engines." The inference from this therefore is that the words "Complete Renewals" also included some proportion of "Heavy Repairs," for which in the Great Western accounts, as in those of the other three group railways, there is a separate heading.

From my own experience of locomotive prices ruling in the last three or four years, it would have been impossible to build or buy locomotives at anything approaching such a figure as £2,860, including, as it surely must have done, at least some 4-cylinder, 6-coupled locomotives of the "Castle" and "King" classes, the cost of which would work out at two to two and a half times the figure of £2,860. In support of this, I compared the cost of renewals, taken out on precisely similar lines to those applied to the Great Western, in the case of the L.M.S. and L.N.E. Railways, both of which included the costs of a large number of locomotives purchased from contractors, and therefore enabled a comparison to be made between the costs in the railway companies' works and those purchased from contractors. In the case of the L.N.E.R. the costs in the company's works and those of contractors were remarkably close. In the case of the

L.M.S.R. the divergence was a good deal greater; but in the case of both railways the figure given for the average cost in these two companies' works was so far in excess of the Great Western figure as to render the latter quite unreliable.

Yours faithfully,

REGULAR READER

[Our correspondent evidently does not appreciate the fact that whilst the expenditure on complete renewals represents amounts incurred during the year on engines, whether commenced in that year or previously and whether completed in that year or subsequently, the number of engines completely renewed is in respect of the number completed and turned into traffic during the year. In other words, the incidence of the amounts in respect of works in progress at the beginning and end of the year, precludes any comparison between the amount shown as expenditure and the number of engines shown as renewed.—Editor, THE RAILWAY GAZETTE.]

Destruction Tests on Cast Steel Railway Wheel Centres

Bolton, Lancs., February 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Referring to the note and illustration in your issue of February 5, I venture to point out that even though a wheel has sustained such deformation without fracture, it is not necessarily "sound" in the sense that it contains no shrinkage cavities. I have carried out a considerable number of such tests on wheels of various kinds cast from a Tropenas converter, and in most cases the smaller wheels (bogie and tender) have withstood, without fracture, 34 drops increasing from 3 ft. to 35 ft. by 1-ft. increments; but in practically all cases when the wheel was subsequently broken up, shrinkage cavities were found in the rim adjacent to the ends of some of the spokes. Very often the cavities at adjacent spoke ends would link up and form a continuous elongated cavity of considerable size, embracing the ends of two or three spokes, swelling out at each spoke end and being constricted between them.

It is not, of course, suggested that the wheel illustrated contains such cavities, or that they are necessarily detrimental. My experience, however, tends to show that wheels cast in steel fall into two categories; those with a few comparatively large cavities in the rim, generally adjacent to each other, and often connected; and those with small unsound areas such as blowholes or groups of blowholes in the rim at every spoke end, or nearly so (the two types may, perhaps, be compared to the "sound" or "rimming" ingots of the steel maker). Of the two types, the wheels with the larger, but fewer, cavities seem to stand the punishment of the drop test the better.

In the tests which I have carried out the wheels have invariably been broken, or cut up afterwards to disclose all defects. The former is preferable, as only by this means can hot cracks or tears be really shown up. It may be objected that a wheel which stands such a drop test satisfactorily needs no further investigation. Nevertheless cavities are a nuisance in the rim, especially where the rivet fastening for tyres is used, and with other types of tyre fastening a cavity may be exposed during machining, as they tend to extend more towards that side of the rim section which was uppermost when cast. In any case, having expended a wheel, costing quite a few pounds, in a destruction test, it seems only reasonable to get as much information from it as is practically possible.

Yours faithfully,

J. W. C.

PUBLICATIONS RECEIVED

Facts about British Railways, 1937.—This interesting little booklet, issued for free distribution annually by the British Railways Press Office, of 35, Parliament Street, S.W.1, describes in an attractive and easily-digested manner the activities of the four main line companies. A foreword by Mr. W. V. Wood, Chairman of the Railway General Managers' Conference, points out that the British railways are not merely railway undertakings, but are transport undertakings, operating almost every form of transport. Mr. Wood also points out that during 1936 the railways continued to make good progress, not only in technical efficiency, but also towards the achievement of a margin of prosperity that will permit them to function to the best advantage of the country. The booklet is full of interesting statistics, and contains many facts perhaps little known even by railwaymen themselves. It is estimated, for instance, that during the last ten years railway passenger services have been speeded up by more than 67,000 minutes a day, and the density of railway traffic in this country (measured by train-miles per mile of line) is now nearly double that of Germany or France, and about five times greater than that of the United States. In spite of this, railway travel is still the safest means of transport in the country. During the last year three passengers lost their lives in train accidents, and, in comparison with the number of passenger journeys made, the risk of death to travellers in train accidents was 1 in 393,000,000. More than 1,300 miles of track are renewed annually, for which 203,000 tons of steel rails, more than 4,000,000 sleepers, and nearly 1,800,000 cu. yd. of ballast are required. The equipment of the railways also provides interesting figures. There are 10,315 signal boxes on the main line railway systems, 141 water troughs from which express trains regularly pick up supplies, and 6,747 passenger and 6,948 goods stations.

Great Western Railway Holiday Haunts, 1937. London: Great Western Railway, Paddington Station, W.2. 8½ in. × 5½ in. × 1½ in. 1,032 pp. Fully illustrated. Folding map. Price 6d. net.—It is only appropriate that the G.W.R., having had bestowed upon it by royal mandate the title "royal road," should give a loyal theme to its Coronation Year edition of "Holiday Haunts." The cover, for instance, on which the colours red, white, and blue predominate, shows a group of happy, sun-tanned children playing around a sand castle embedded with stones forming the royal emblem. A slip-in portrait group of the Royal Family is also included. The guide itself, as indeed the title indicates, is to haunts—places which for one excellent reason or another have become popular with holiday makers. The Great Western, serving

Devon, Cornwall, Somerset, Wales, and the Channel Islands, might well be called the line that never disappoints. What child, for instance, when gazing upon the tail of England creeping down towards the Atlantic breakers at Land's End, would dream of asking, as one small boy did on surveying that barren northern counterpart, John o' Groats, "Daddy, what have we come here for?" The Great Western territory from the Thames Valley to its various extremities on the southern and western seaboard, as portrayed so admirably in the photogravure pages of "Holiday Haunts," is full of the qualities which attract the holiday maker, whatever his mood or taste. The hotel and other information is clearly set out, and a useful folding map of the G.W.R. system is included in a special pocket. The review copy we have received is fittingly bound in a red cloth binding.

Holidays by L.M.S., 1937. London: London Midland & Scottish Railway, Euston, N.W.1. 8½ in. × 5½ in. × 1½ in. 968 pp. Fully illustrated. Folding map. Price 6d. net.—Here is a holiday guide indeed. Who, looking at the cheerful bathing girl cover, let alone glancing through the many pages of photogravure illustrations, could fail to start thinking about this year's holiday? Such is the success with which the compilers of this popular annual have met. The L.M.S.R., needless to say, offers a wide range of choice to the prospective holiday maker. Its tentacles spread all down the West Coast, into the Midlands, into Wales, and far away to near John o' Groats in the extreme North. Such, however, is the magnitude of this, the largest system of the four groups, that it is necessary to confine "Holidays by L.M.S." to the resorts of England and Wales. Even thus deprived of the glory of the Highlands, however, this guide can still show such superb and exhilarating scenery as that of the Lakes, the Derbyshire Peak, Warwickshire, or Mid-Wales—and what is more typical of England than these? For those less inclined towards these comparatively solitary parts, however, there are the gay pleasure beaches of Lancashire and the Isle of Man, which even in photogravure seem to echo whoops of joy. The hotel and other information is admirably arranged. A large folding map of the L.M.S.R. system is included at the back.

L.N.E.R. Holiday Handbook, 1937.—London: London & North Eastern Railway, Liverpool Street Station, E.C.2. 8½ in. × 5½ in. × 1½ in. 920 pp. Fully illustrated. Folding maps. Price 6d. net.—To be confronted with bright, summery scenes a month before Easter, while snow is still falling, is, to say the least, a little tantalising. But we may seek consolation in the fact that, unlike Tantalus, we shall in a few months' time be able to grasp what is now so attractively set before us. The luxury of sun-

shine is everywhere apparent in this year's "Holiday Handbook." Even the cover, which in previous years has been of simple design, is adorned with a brightly-coloured beach scene from the imaginative brush of Frank Newbould. This has also been put to good use in the form of an arresting poster. The L.N.E.R. territory is rich in its diversity of types. There are the East Coast resorts with their galaxy of bathing belles, the Norfolk Broads with a host of white sails flapping to the lazy tunes of a thousand gramophones, the lonely Yorkshire moors, the serene Highland lochs, and the magical mist-laden Western Isles. Who could turn away dissatisfied from such a choice? All these different holiday resorts are described and illustrated with photographs beautifully reproduced in photogravure. Many sketch maps are also included. In addition, the "Holiday Handbook," which this year is thread sewn, provides an invaluable guide to hotel, boarding-house, and lodging accommodation.

Southern Railway Hints for Holidays, 1937. London: Southern Railway, Waterloo Station, S.E.1. 8 in. × 5½ in. × 1½ in. Pp. 968. Illustrated. Price 6d. net.—We are well accustomed to bathing belles, high and dry, adorning the pages of holiday literature, but a submerged beauty, and upside-down at that, is a novelty for which the cover to this year's "Hints for Holidays" may take full marks. The sub-title to this handbook to the pleasure resorts of the South Coast is aptly, "The Sunshine Guide." The Southern Railway is first and foremost a line catering for those who seek festive holidays full of pleasures and junketings, such as Milton describes in "L'Allegro" as Sunshine Holidays. Nevertheless, as this attractively arranged guide clearly demonstrates, the Southern territory is by no means without its beauty spots and associations with the past. Indeed, there are the Cheddar Gorge, Lulworth Cove, North Devon, and Cornwall, none of which can fail to delight the town-weary heart. As a guide, the arrangement of "Hints for Holidays" is admirable, and details of the facilities offered by each resort are given in addition to topographical notes. The numerous illustrations, which are interspersed amid the text, are, unlike those in the publications of the other three groups, reproduced in half-tone. In addition, there is, of course, the usual well-arranged hotel and other information.

Bearing Symbols.—A useful table showing the British Standard symbols for ball and roller journals, single and double thrusts, with their equivalent designations in the Hoffmann catalogue, has been issued by the Hoffmann Manufacturing Co. Ltd., Chelmsford. A key to the meaning of the British Standard symbols is included. The new standard symbols show at a glance, the particulars of the bearings, and whether of the journal or thrust type.

THE SCRAP HEAP

A woman went recently to Grimsby railway station and confessed that 20 years ago she took a dog by train from Sutton-on-Sea to Grimsby without paying its fare. To "ease her conscience" the stationmaster issued a dog ticket for 1s. 3d.

EX-RAILWAYMAN OVER 90 MARRIED A GIRL OF 19

Mr. George Skeet, of Burnham Market, Norfolk, who has just died at the age of 102, married, when over 90, a girl of 19. By the marriage they had a son and a daughter. He was the oldest railway pensioner, and remembered his grandfather, who fought with Lord Nelson, telling him of how the famous admiral fell at Trafalgar.

RENO'S "DIVORCE TRAINS"

Railway companies whose trains run to and from Reno, Nevada, "the divorce capital," and parts of California, have installed special stewardesses to care for children travelling from one divorced parent to another. On a single trip, states a Reuter's message, one stewardess had 11 children in her care. The fathers in most cases are business men at work in the Eastern part of the continent, while the mothers—the ex-wives—live on the alimony on the sunnier Pacific coast.

A REMARKABLE COINCIDENCE

A remarkable coincidence was brought to light by Checker J. Robinson, of Haydon Square Goods, who upon being instructed to unload two wagons found they were both the same number. The wagons concerned were L.M.S. 48482, ex Padiham, January 27, 1937, and S.R. 48482, ex Warrington, January 27, 1937. Upon referring to the records, it was found that both wagons arrived at Haydon Square 5.10 a.m.—From the "L.M.S. Magazine."

An ant can carry twenty times its own weight. In proportion, an average man should be able to lift his automobile.

TELEGRAMS FROM TRAINS

No fewer than 10,009 telegrams were sent by passengers in express trains from February 1, 1936, to January 31 last in the first year of the experimental scheme organised by the British railway companies and the Post Office. This figure does not include telegrams collected by Post Office messengers who canvass important trains at Paddington, Plymouth Docks, Euston, Liverpool (Lime Street), Manchester (London Road), and Birmingham (New Street). The scheme is to be continued.

A DEMOCRATIC WHISTLE

The people's choice in locomotive whistles is to be installed on all the Florida East Coast Railway trains. When citizens along the right of way complained about the shrill whistles on its trains, the railroad equipped a locomotive with six different types of whistles and stopped at 19 cities between Miami and Jacksonville to toot them all. People were then asked to indicate their choice. Whistle number three—having a deep, pleasing tone, yet capable of providing ample warning without being offensive—received nearly 90 per cent. of the votes and it will now become the road's standard.—From "The Delaware & Hudson Railroad Bulletin."

The diesel-electric locomotive a year ago thought it had only the conventional steam locomotive to beat. It has, perhaps, been surprised at the race the old iron horse has been staging. Now both the steam and diesel-electric locomotives have to look to their laurels because a young colt has

Down with damage and delay !!
They destroy dependability on which our reputation and livelihood depend

**Competition
winners submit
claims—**

**We become
winners in the
absence of claims**

No. 4 of a new series—the third—of "claims prevention" posters issued by the Chief Goods Manager, G.W.R., for exhibition to the staff

stuck its head out of the barn door—the steam turbine locomotive. The new colt starts out with 1,200 lb. boiler pressure, steam temperature 800° F. and a threat of delivering a horsepower at the cost of 8½ lb. of steam per hour. Thus the race continues. The horse which shows the greatest reliability, availability, efficiency and economy will win. The processes of applied research and of experience are operating on them on many fronts.—Mr. L. W. Wallace, Director of Equipment, Research Division, Association of American Railroads, in a paper read before the New England Railway Club at Boston on February 9.

One Hundred Years Ago

Extracts from the March, 1837, issue of "The Railway Magazine" (afterwards "Herapath's Railway Journal") and the oldest constituent of THE RAILWAY GAZETTE

Kent Railway.—We insert a plate of this line in the present number, but have not been able to get the materials together for a description of it.

Greenwich Railway Hoax.—A most vile hoax has been played off on several respectable morning papers, no doubt by some mischievous imp of the Stock Exchange. It has been stated that the whole concern had been seized by an execution at the suit of Mr. Macintosh, the contractor, for a debt of £300,000!!! We hope the papers can identify the author, whom it would be gratifying to see soundly ducked in the Croydon Canal, and then carried daily on the top of one of the engine-chimneys for a week backwards and

forwards every journey, that the fellow may see and be seen.

Railway Switches.—Mr. Rooke, dancing master, of Botcherby, near this city, has invented a method by which the engine performs the work of putting the switches right itself, and in whatever direction the engineman wishes to travel.—*Carlisle Journal*.

The Tamworth and Rugby Railway.—At a numerous and respectable meeting of the landowners on the line of the proposed Tamworth and Rugby Railway, it was resolved that the projected railway was uncalled for on public grounds, and an unnecessary interference with, and violation of the

rights of private property, and it was, therefore, determined to give it a decided opposition in Parliament.—*Liverpool Times*.

Railroads in Egypt.—His Highness Mehemed Ali has just ordered the commencement of a railroad for the transport of stone at Tourab, a place six miles to the south-east of Cairo. This railroad will be upwards of five miles in length, running from the Mokatum mountains to the Nile. The Suez railroad has not yet been commenced.—*Mining Journal*.

Railway Notices.—A locomotive steam engine, on a new plan, for common roads, has just been built at Brussels, whence it will be immediately brought to Paris. It is said to be exempt from the usual inconvenience of steam carriages.—*Hampshire Advertiser*.

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

INDIA

The Railway Budget

On February 16 the Railway Budget was presented to the Legislative Assembly by Sir M. Zafrulla Khan, the Railway Member, and to the Council of State by Sir Guthrie Russell, Chief Commissioner of Railways. In February, 1936, a deficit of Rs. 3.44 lakhs was expected on the working of the Indian railways during the year 1936-37. The revised estimates now submitted indicate an improvement of Rs. 3.59 crores, and for the first time since 1929-30, a surplus, though only of Rs. 15 lakhs, in the Railway Budget is expected. It is now expected that the gross traffic receipts for 1936-37 will amount to Rs. 95 crores, or Rs. 4.33 crores more than last year. Almost the whole of the increased receipts is accounted for by the heavy movement of goods during the year. In regard to passenger traffic, the Railway Member's remark, that it was difficult to avoid the conclusion that uneconomic bus competition continued to make inroads into railway revenues, is significant. After allowing for working expenses, interest and other charges, there will be a surplus of Rs. 15 lakhs, which will be applied to the repayment of loans taken from the depreciation fund. The Railway Member explained that the surplus would have been larger by Rs. 36 lakhs, but for the adoption during the year of the revised methods of accounting recommended by the Financial Commissioner with the object of reducing over-capitalisation.

1937-38 Estimates

From April, 1937, the Burma Railways will be separated from the Indian railway system, and as the operation of the former has been resulting in deficits, the Indian railways are expected to benefit, financially, from the separation. Gross traffic receipts on the Indian railways for 1937-38 are estimated at Rs. 90½ crores. The increase of Rs. 16 lakhs in the budget estimate of Rs. 61½ crores under working expenses, is due mainly to the fact that, under the new constitution, the Provincial Governments have to be paid the cost of police required for maintaining order on railway premises. The estimated net revenue of Rs. 29½ crores will just meet the interest charges and leave a surplus of Rs. 15 lakhs, which will be transferred to the general revenues.

It is proposed to bring before the Legislature at an early date a resolution embodying an amendment of the convention of 1924 for the separation of railway from the general finances. During the period of deficits the railways have incurred a liability of Rs. 31.33 crores to the depreciation

fund, while a sum of about Rs. 31 crores payable to the general revenues under the separation convention has remained unpaid. In the interests of both the railway and general finances, it is considered desirable to write off these liabilities and begin the coming year with a clean slate. Under the terms of the existing convention, the railways are not deemed to have earned surplus profits for the purpose of division until the liability to the depreciation fund is completely wiped off—a process which may not be completed for several years.

Purchase of Wagons

In regard to expenditure in 1937-38 not charged to revenue, the total cost of the programme of works for the year is placed at Rs. 11½ crores, but it is expected that a provision of Rs. 8½ crores will be sufficient to meet the requirements of the coming year. Apart from expenditure on track renewals, bridge and other structural works, the Government of India proposes to purchase 2,000 wagons in place of 750 ordered during 1936-37. It is considered that the large increase in goods traffic in the current year justifies a substantial addition to the wagon stock.

New Construction Works

The Railway Board has examined several projects of new construction and has come to the conclusion that two new lines of railway in Sind are likely to prove remunerative. One is the Sind Right Bank Feeder Railway from Larkana to Jacobabad; and the other is a line from Pithoro to Tando Mitha Khan. The increased acreage under cultivation brought about by the construction of the Lloyd Barrage has necessitated the extension of transport facilities in these parts. A sum of Rs. 30 lakhs is provided for expenditure on these two lines in 1937-38.

After explaining the need for caution in regard to expenditure, the Railway Member added that the railways were making preparations for better times to come. As an example of the efforts of the railways in this direction, he mentioned a scheme which was to be tried during the next hot weather for the running of five first class air-conditioned coaches on selected mail trains. Air-conditioned coaches had, he said, long been introduced in America, and the advantage of such coaches on long-distance services in India was apparent. Not only was a uniform temperature maintained inside the coach irrespective of external conditions, but the elimination of dust, smoke and cinders removed common sources of discomfort in railway travel in India. The additional cost of the air-conditioning equipment on the five coaches was estimated at Rs. 2,40,000,

and it was hoped to recover this outlay by the imposition of a small surcharge on passengers travelling in these coaches. If the experiment proved successful, additional air-conditioned coaches would be put into service, and the Railway Member visualised a not-distant future when it might be possible to run complete air-conditioned trains of all classes. Sir M. Zafrulla Khan also enumerated some of the lines of technical research taken up by the railway experts to improve the efficiency of the Indian railways and to reduce capital and recurring expenditure.

A notable feature of the present Railway Budget lies in the surplus expected in the two successive years after taking into account the loss of Rs. 1.89 crores per annum on strategic railways. This means that on commercial lines alone the estimated surplus exceeds Rs. 2 crores in each of the years concerned.

ARGENTINA

Buenos Aires Air Port

The President of the Republic has signed a Decree approving of the draft Bill for an air port in Buenos Aires on the lines recommended by the commission referred to in THE RAILWAY GAZETTE of November 8, 1935.

Government Purchases Port of Posadas

The port of Posadas, the capital of the territory of Misiones, on the Paraná River, has been purchased by the National Government for \$500,000. It is served by the Argentine North Eastern Railway, through which it is connected with the Paraguayan Central Railway, the southern terminus of which is on the other bank of the river opposite Posadas. The latter is 1,583 km. from Buenos Aires; the port is for shallow draught steamers only.

B.A.G.S. and B.A.W. Railways Petition for Increase in Tariffs

The local boards of the B.A.G.S. and B.A.W. Railways have addressed a joint note to the Government asking for permission to increase the present freight rates on certain classes of merchandise, principally agricultural produce. The request is based on the financial difficulties of the companies during the last few years, due to the serious decline in the receipts, increased working expenses, and losses on exchange, and the more remunerative prices now being obtained for agricultural produce.

B.A. Terminal Central Railway Extension

A Decree has been issued by the Government authorising the Buenos Aires Terminal Central Railway (Lacroze Underground) to extend its lines to the Port zone, in accordance with Article 17 of the concession. The extension will be a surface line, and in order to avoid the difficulties involved by the difference in the gauges of the B.A. Central and the States lines, a transhipment station will be constructed. The Decree stipulates

that the station and corresponding lines (the cost of which will be borne by the company) shall be of a provisional character, to permit of modifications being made should traffic so demand. The work will be carried out under the control of the municipality, which will have the same intervention as during the construction of the main line. Two years are allowed for the completion of the work.

Record Grain Shipments

The second half of January witnessed two successive weekly records in grain shipments, over 1,000,000 tons being recorded during the fortnight as under:—

	Week ended January 21 January 29		Fortnight. Total
	Tons	Tons	Tons
Wheat	209,284	198,826	408,110
Maize	232,506	266,481	498,987
Linseed	43,659	57,210	100,869
Oats	16,433	9,769	26,202
	501,882	532,286	1,034,168

SOUTH AFRICA

Financial Position

The results of working for the nine months April to December show a revenue surplus of £1,578,669 over expenditure, after allowing for special appropriations of £637,500 to betterment fund, £365,250 to deficiency in pension and superannuation funds, £750,000 to rates equalisation fund, £187,500 to reduction of branch line capital, £937,500 to renewals fund, £1,027,942 to responsibility allowance and refund of the 1932-33 temporary wage deduction, £187,500 to writing out of capital account discount and expenses on pre-Union capital, and £21,935 to writing down value of obsolete aircraft. Revenue from transportation services only for the period totalled £24,115,683, an increase of £1,712,154 on the previous year. Working expenses increased from £14,575,914 to £15,275,886, or by all but £700,000, so that the net improvement was almost exactly £1,012,000.

Tourist Traffic

The number of visitors to the Union in 1936 was 35,270 as compared with 17,400 in 1935 and 10,363 in 1934. The number of persons who gave business reasons for their visits were 3,053, 1,644 and 1,325 respectively.

Railway Safety Inquiry

A commission has been appointed to inquire into all factors connected with the safety of rail travel in the Union. The commission consists of the Acting Chief Traffic Manager, the Assistant Chief Mechanical Engineer, a System Manager, the Signal Engineer, the Inspecting Engineer and the Chief Superintendent of Motive Power. Evidence will be taken on all systems and attention will be devoted to the condition and maintenance of the track, locomotives and rolling stock, the speed of trains and the human element in their working will also be considered. An opportunity will be given to representatives of all sections of the staff to

give evidence. Such representatives will be chosen by ballot with the exception of gangers, guards and drivers who will appoint representatives at every depot in each system. All other staff sections will be permitted one representative only in each system.

Public Utility Company for Tourist Industry

As a counter-proposal to the Publicity Association's recommendation that a Ministry of Tourism be established [as recorded in these columns last week.—Ed. R.G.], the Minister of Railways and Harbours, recently stated in the House of Assembly that the Government was in favour of the establishment of a public utility company for the control of the tourist industry. He suggested that, in the first instance, there could either be specific legislation or the corporation could be registered as a non-profit making concern. The Government would require only moderate representation on the board but it would, however, insist that the annual budget of such a body be submitted for the approval of the responsible Minister.

Dealing with the financing of the scheme, the Minister said that originally it was suggested that the railways would find a sum up to £50,000 on the pound for pound basis, but if the interested parties could not find 50 per cent. of the necessary amount, he suggested that the railway administration should be responsible for 50 per cent., the central Government 25 per cent., and the interested parties 25 per cent.

The Minister considered that it would be reasonable to begin with an income of £50,000 per annum. This amount could be increased until the board would eventually control an income of £100,000 per annum. The Government was not, however, prepared to put up the money unless it was satisfied that the other interested parties would find their share, and it was therefore necessary to insist upon a guarantee from these parties. The guarantee should extend over a period of not less than five years to ensure the success of the scheme.

As far as the railways were concerned the scheme would come into effect as soon as possible, and there was no reason why the proposed public utility company should not function within the next few months.

SPAIN

Nationalist Railway Operation

As previously mentioned, the railway services in the parts of Spain occupied by General Franco's Nationalist forces have been running normally almost throughout the civil war. It may, however, be added that great advantage accrues to trade with the Nationalist ports, in that goods are dispatched promptly and rapidly inland by rail, and trains are run strictly to schedule.

UNITED STATES

Floods Cause Slight Physical but Extensive Traffic Damage to Railways

Subsidence of the Ohio River flood waters has revealed surprisingly little damage to railroad property, except that which submergence would naturally entail. The railway services most severely interfered with were those of the Illinois Central, which for days upon end was effectually bisected by the floods. The Louisville & Nashville management was handicapped by the fact that its headquarters building in Louisville, as well as all stations in the city, were flooded for several days. Considering the damage suffered by other properties, the railways have survived the inundation remarkably well from a physical point of view. From interference with traffic, however, their losses have been considerable. Freight car loadings which had been averaging some 15 per cent. above those of last year, in the week of January 30 were but 6 per cent. above the comparable week in 1936, and had risen to but 8½ per cent. above last year in the February 6 week, the total loadings in that week being 675,000.

An Amalgamation Proposal

Discussion upon railway amalgamation in Eastern territory has been revived by the application of the Chesapeake & Ohio to the Interstate Commerce Commission for authority to acquire direct control of the Erie and the Nickel Plate (New York, Chicago & St. Louis) by purchase of a majority of their share capital. Such majorities are already held by interests affiliated to the Chesapeake & Ohio, but the desired authority would permit of much closer integration than that which now obtains, and might well be a step toward complete amalgamation, and might also urge the other large Eastern systems toward efforts in the same direction.

New Rolling Stock

The Southern Pacific Company has recently ordered 41 new coaches of modern design for use in its services along the Pacific Coast and to re-equip one of its trains in Texas. The Missouri-Kansas-Texas has likewise placed orders for 29 vehicles intended for its service between St. Louis and the Southwest.

Nearing completion at the Baldwin Locomotive Works are 10 Pacific type locomotives for the New Haven Railroad designed for an accelerated train service between New York and Boston, where undulating gradients and frequent speed restrictions for drawbridges necessitate rapid acceleration and ample tractive power. As in the case of many of the other locomotives now being constructed in America, the cylinders, frames and compressed air reservoirs of these engines are in the form of one casting, and one-piece water-bottom castings are also the rule for the tender frames. Class 1 railroads had,

collectively, 362 new steam locomotives on order on February 1, a larger number than on any corresponding date since 1930, when there were 441. New electric and diesel locomotives on order totalled ten.

More new freight cars also were on order on February 1 than on any corresponding date since 1926, the total being 36,036; on February 1, 1926, there were 50,636 on order. Of the new freight cars on order this year coal cars totalled 16,716; box cars (both plain and automobile) 13,730; refrigerator cars 3,128; flat cars 762; stock cars 700; and miscellaneous 1,000.

URUGUAY

New 75-mile State Railways Treinta y Tres to Rio Branco Branch

By the courtesy of Señor José Leon Ellauri, General Manager, State Railways of Uruguay, and Mr. H. H. Grindley, General Manager, Central Uruguay Railway, a party of 40 members of the Buenos Aires Association of the Institution of Civil Engineers, and the Argentine and River Plate Centre of the Institute of Transport, recently paid a week-end visit to the new Treinta y Tres—Rio Branco branch of the State Railways of Uruguay. The party, which was headed by Mr. John H. Taylor, M.Inst.C.E. (Chairman of the Association of the Institution of Civil Engineers), and Mr. J. G. Mayne (Chairman, Local Centre of the Institute of Transport) left Buenos Aires on Friday evening, October 9, by river steamer for Montevideo, and was received on arrival next morning by Señor Ellauri and Mr. F. C. Pearson (Acting General Manager, Central Uruguay Railway). The visitors, who were accompanied by Engineer E. P. Vasquez (Superintendent, Way and Works Department), and Señor A. Marques (Locomotive Superintendent), State Railways of Uruguay, and Messrs. F. W. Romer (Chief Engineer) and C. Horton (Secretary to the General Manager), Central Uruguay Railway, left Montevideo Central station on October 10, at 10.15 in a special petrol-driven railcar, and arrived at Rio Branco at 17.45, making a thorough inspection of the line, stations, bridges and railcars. The new line, which is 123 km. long, extends from Treinta y Tres, the former terminus of a branch of the Central Uruguay Railway, to Rio Branco, on the right bank of the Yaguaron River, 456 km. north-east of Montevideo. The construction of the line was provided for in the treaty dated February 16, 1928, between the Uruguayan and Brazilian Governments, which modified an agreement of 1918 cancelling a debt to Brazil of 8,000,000 pesos (Uruguayan) on condition that works of utility to both countries were undertaken.

The branch is single-line throughout, and the track, 4 ft. 8½ in. gauge, is

laid with 80-lb. rails, 12 m. long, clipped to steel sleepers; ballasting throughout is with "smalls" of broken granite; there are six intermediate stations. About 2 km. beyond Rio Branco station the line reaches the new international viaduct across the Yaguaron River, linking Uruguay with Brazil. From Rio Branco to Yaguaron, both the standard gauge of the Uruguayan railways and the metre gauge of the Brazilian railways are laid, thus permitting of transshipment in either country. Level crossings are few, full advantage having been taken of the undulating country to provide reinforced concrete highway bridges. There are 30 bridges in all, the longest of which crosses the River Tacuari. The line, which was officially inaugurated in April last, was built by the Anglo-Scottish Construction Company, at a total cost of \$4,232,000 pesos (Uruguayan), approximately equivalent to £450,200 at current exchange rates.

The passenger rolling stock consists of single-unit railcars constructed by the Brill Company of the U.S.A. They are equipped with 160-h.p. petrol engines. First class cars have accommodation for 60 passengers, while those having first and second class accommodation seat 75; the maximum speed of the cars is 68 m.p.h. [Views of the branch and rolling stock are reproduced on page 498.—Ed. R.G.]

DENMARK

Road and Rail Traffic Co-operation

The Minister of Transport has appointed a committee to work out a complete plan of co-ordination of transport throughout the country. It is to insure that the needs of every district are covered adequately, and it is also to decide which form of transport is to be used so as to serve best the convenience and economic interests of the country. The committee will also advise the Government with regard to the closing of various road or rail services and routes, and the best means of co-operation between the two interests the balance of funds required is taken from petrol and other motor taxes.

Bridges Replacing Level Crossings

A Bill has been laid before Parliament (Rigsdag), to reduce unemployment by the utilisation of some 30 million Kroner for road building and road improvement, and a further 14.5 million Kroner for the building of bridges to eliminate dangerous level crossings. In such cases—and there have already been many—the State Railways contribute an amount corresponding to the capitalised saving effected by closing the level crossing and the discharge of the gatekeepers; the balance of funds required is taken from petrol and other motor taxes.

Several serious accidents have recently occurred at level crossings, and an investigation by the State Railways

shows that about 50 level crossings are dangerous and ought to be replaced by bridges; it is these that the new Bill covers. The whole scheme is to be carried out in the shortest possible time, and it is expected that all the bridges will be completed within two years.

SWITZERLAND

Reduced Rates for Motorcars Through the Alpine Tunnels

Reduced and simplified charges were introduced on February 15 by the Federal Railways for the transportation of motorcars through the Gotthard and Simplon tunnels. A reduction of 40 per cent. is now granted on the charge for the return trip if this is made within 10 days, whether through the same or through the other tunnel. On the Gotthard line, cars can also be loaded at stations before Göschenen and conveyed to stations beyond Airolo, thus avoiding the actual mountain road. Low through rates are also available in connection with the Lötschberg Railway from Spiez, Frutigen, and Kandersteg to Domodossola and vice-versa.

CHINA

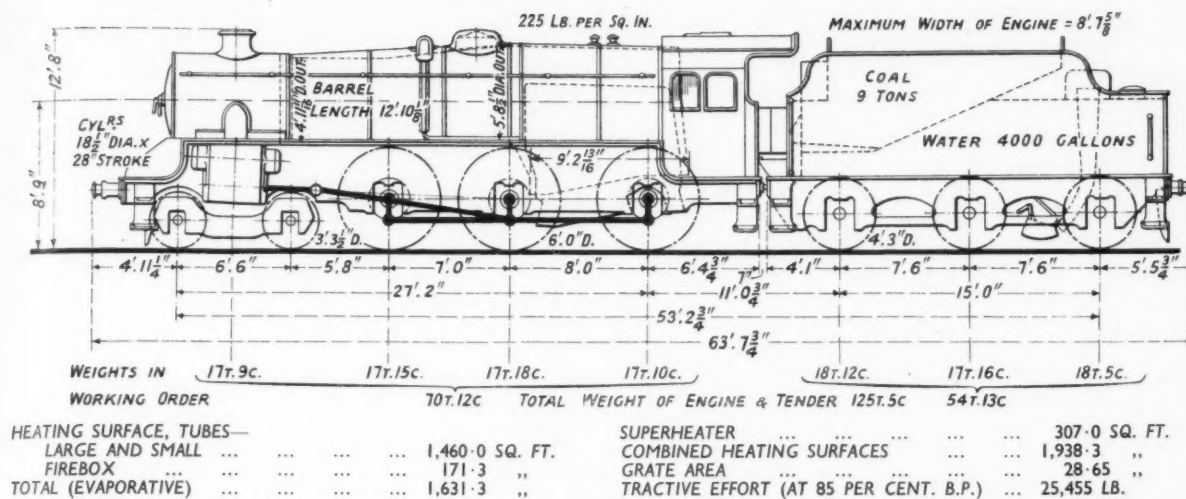
Transport Co-ordination

Mr. Lin Sen, Chairman of the National Government of the Republic referring recently to the progress made in improving the communications of the country, stated that China now had 20,000 km. of railways, 1,700 km. having been added during 1935. As she now had 128,000 km. of highways and 13,000 km. of airways, competition was, he said, only to be expected, and therefore some effort at co-ordination of railways, roadways and airways might be studied with advantage, judging by experience of other countries where competition had injured the railways.

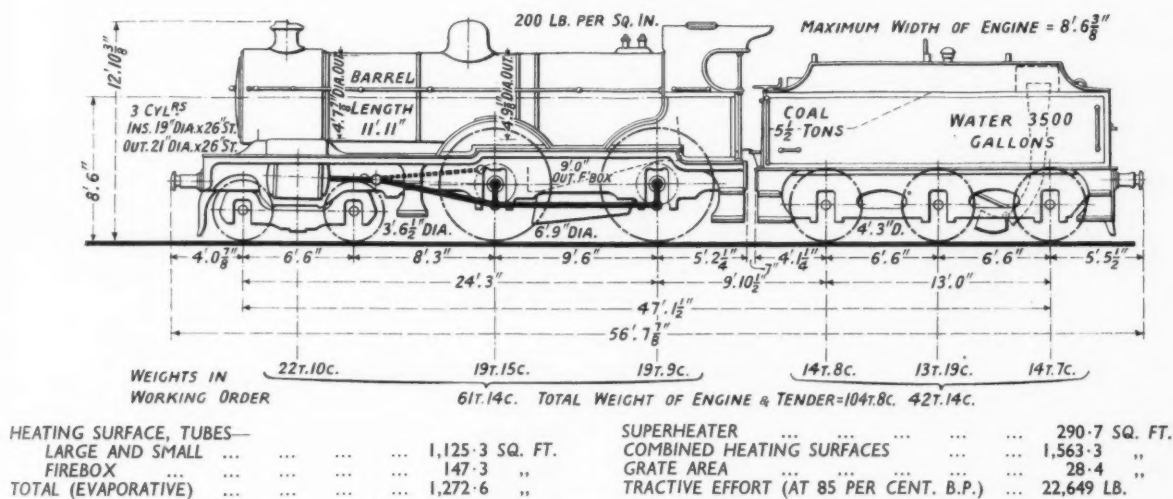
Hunan-Kweichow Railway

Great importance is attached throughout commercial circles in China to the recent conclusion between the Ministry of Railways and a group of German firms of a \$30,000,000 loan for the supply of materials and rolling stock for the great 1,000-km. line—upon which work has now begun—to connect Chuchow in Hunan with Kweiyang the capital of Kweichow Province. This line which will eventually be extended into the neighbouring province, Yunnan, will give direct rail communication from extreme south-western China to (1) Shanghai, via Nanchang and Hangchow; (2) Peiping, via Hankow; (3) Nanking, via Kweichow, Sunchiapu, and Wuhu; and (4) Canton and Hong Kong via the Canton—Hankow line. The Ministry is also borrowing a further \$10,000,000 from the same source for German materials required for the rebuilding of the Yellow River bridge on the Peiping—Hankow Railway.

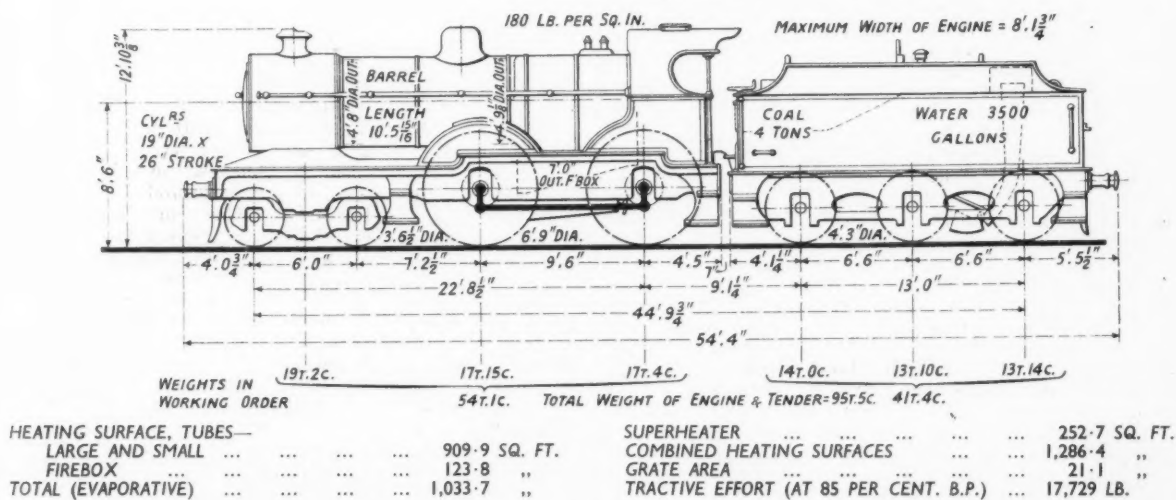
British Locomotive Types—V London Midland & Scottish Railway



5P.5F Class

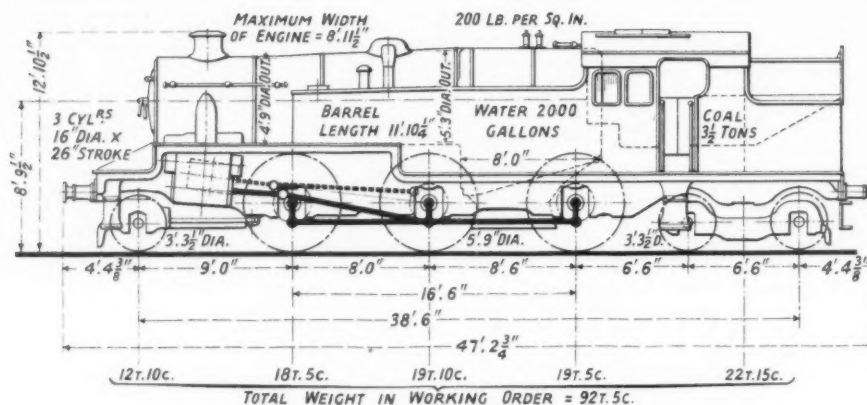


4P Class (Compound)



2P Class

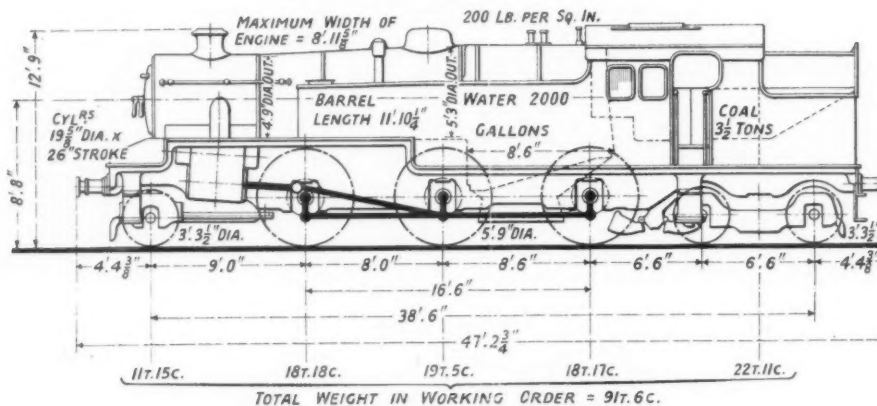
British Locomotive Types—V London Midland & Scottish Railway



HEATING SURFACE, TUBES—
 LARGE AND SMALL 1,000.0 SQ. FT.
 FIREBOX 137.0
 TOTAL (EVAPORATIVE) 1,137.0

SUPERHEATER 153.5 SQ. FT.
 COMBINED HEATING SURFACES 1,290.5
 GRATE AREA 25.0
 TRACTIVE EFFORT (AT 85 PER CENT. B.P.) ... 24,600 LB.

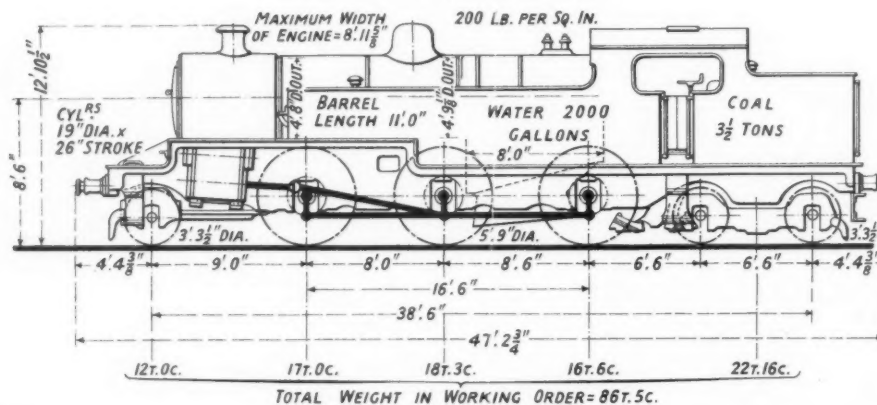
4P.T Class (Taper boiler, 3 cyl.)



HEATING SURFACE, TUBES—
 LARGE AND SMALL 1,126.0 SQ. FT.
 FIREBOX 139.0
 TOTAL (EVAPORATIVE) 1,265.0

SUPERHEATER 185.0 SQ. FT.
 COMBINED HEATING SURFACES 1,450.0
 GRATE AREA 26.7
 TRACTIVE EFFORT (AT 85 PER CENT. B.P.) ... 24,670 LB.

4P.T Class (Taper boiler, 2 cyl.)



HEATING SURFACE, TUBES—
 LARGE AND SMALL 953.0 SQ. FT.
 FIREBOX 137.5
 TOTAL (EVAPORATIVE) 1,090.5

SUPERHEATER 266.25 SQ. FT.
 COMBINED HEATING SURFACES 1,356.75
 GRATE AREA 25.0
 TRACTIVE EFFORT (AT 85 PER CENT. B.P.) ... 23,125 LB.

4P.T Class (Parallel boiler)

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Tyre Fashions for Goods Vehicles

THE remarkably rapid change in tyre fashions during the last eight years is shown by figures appearing in the recently-published Ministry of Transport census of mechanically-propelled vehicles. Of the goods vehicles, other than those classified as "agricultural" or "showmen's special," of an unladen weight exceeding 2 tons (2½ tons in the case of heavy-oil-engined vehicles) the proportions fitted with pneumatic and solid tyres were as follow:—

Quarter ended September 30	Pneumatic tyres per cent.	Solid tyres per cent.
1929	16.56	83.44
1930	25.10	74.90
1931	39.05	60.95
1932	53.17	46.83
1933	68.33	31.67
1934	88.63	11.37
1935	94.37	5.63
1936	97.03	2.97

The abandonment of the solid tyre in general has been enforced very largely, of course, by the requirement that new public-service vehicles shall be equipped with pneumatic tyres. The process has been hastened, moreover, by the decision of Mr. Winston Churchill, when Chancellor of the Exchequer in 1928, to allow a tax rebate on vehicles fitted with pneumatic tyres.

Bristol Area Developments

IMPORTANT progress in many directions was reported by Mr. John F. Heaton when he presided recently at the general meeting of the Bristol Tramways & Carriage Co. Ltd. The net profit of £162,705 on last year's working is no less than £67,000 above the figure for the previous year. Considerable progress has been made in the negotiations with Bristol Corporation. The proposed agreement provides for the sale to the corporation of the company's statutory (tramways) undertaking for £1,125,000, to be taken either in cash or Bristol Corporation stock. There would then be a scheme of co-ordination by which the tramways and the company's city bus undertaking would be operated as a single unit, and the net surplus of revenue divided equally between the two parties. It will be recalled that arrangements with Gloucester Corporation were successfully concluded last year. In that case the company acquired for cash from the corporation the rolling stock and other tangible assets of its bus undertaking, and at the same time entered into a working arrangement under which the company works the local services in co-ordination with the services in the surrounding area. The agreement is for a period of 21 years, the corporation receiving a fixed annual sum together with a share in any net surplus there may be. Another transaction of importance which was carried through towards the end of the year was the acquisition of a controlling interest in the Bath Electric Tramways Limited and the Bath Tramways Motor Co. Ltd. Details of the area served by the Bath group were given on

page 661 of our Road Transport Section for October 23 last. A further interesting development is the acquisition by the Bristol company of the goodwill or running rights in Weston-super-Mare of the tramways of the Weston-super-Mare & District Electric Supply Co. Ltd., a comparatively small company in the B.E.T. group with 3 route miles of track. It is intended to scrap the trams, which were opened in May, 1902, and here again the business will be merged and co-ordinated with that of the Bristol company.

Organisation of the Bus Industry

ON Tuesday of last week Mr. Charles F. Klapper, Honorary Secretary of The Omnibus Society, outlined the organisation of the bus industry in Great Britain in a comprehensive paper he presented to the Metropolitan Graduate and Student Society of the Institute of Transport. He traced the gradual grouping of bus proprietors from the working associations formed in London from 1833 onwards, through the stages of the amalgamation of small businesses into larger units, up to the present organisation of the provincial bus industry in area companies. The last-named are nearly all railway-associated, and the financial interests of the main-line railways are set out in our annual statement on page 485. In addition to direct railway associates, there are various "grand-daughter" companies and Mr. Klapper cited the Bristol Tramways & Carriage Co. Ltd. (referred to in our previous note) as a particularly complex case. At the bottom of the scale is the Bath Tramways Motor Co. Ltd., which is allied with the Bath Electric Tramways Limited; the latter is controlled by the Bristol Tramways & Carriage Co. Ltd. That undertaking is a subsidiary of the Western National Omnibus Co. Ltd., in which the National Omnibus & Transport Co. Ltd. holds one-half of the ordinary share capital and the Great Western Railway the other half. Thomas Tilling Limited holds upward of 90 per cent. of the National Omnibus & Transport ordinary share capital, so that the ultimate control is shared by Tilling and the G.W.R.

Experimental Test Shop for Chiswick Works

THE Chiswick bus works of the London Passenger Transport Board, which were opened in 1921 by the old London General Omnibus Co. Ltd., are in course of being replanned, and one of the important facilities to be added is an experimental test shop 70 ft. long and 40 ft. wide. The object of the shop is to provide improved facilities for research and experiment with the ultimate aim of improving the performance of the board's vehicles and assisting the development of new design. Although most of the experiments will be with a view to decreasing running costs by reducing consumption of fuel and lubricants and extending the life of working parts, tests are also contemplated for reducing noise and vibration and

improving riding comfort. With design of the future in mind, means will be investigated whereby engine power output can be improved, braking efficiency increased, and transmission systems developed to give smoother acceleration and easier control. The use of the shop will be confined largely to preliminary technical investigations which should indicate whether a particular alteration to design or an invention will be likely to justify a test under service conditions. It is still the board's opinion that a test under practical conditions is the deciding factor; the advantage of research under workshop conditions is the relative rapidity with which results can be obtained as compared with service testing.

British Railways and their Road Interests

THE interests of the four main-line railways in passenger road transport are chiefly those of shareholdings in bus companies, and, as shown in our table on the opposite page, these have been acquired at a cost of £9,468,367. In addition, the L.M.S.R. and L.N.E.R. are parties to joint arrangements with certain large municipal transport undertakings, and the railway buses included in the fleets worked by such joint committees doubtless account for the L.M.S.R. total of £188,479 and the L.N.E.R. figure of £66,621 capital expenditure on passenger road vehicles. The railways thus have a stake of nearly *ten million pounds* in bus and coach operations which use, incidentally, about 15,000 vehicles.

Goods transport by road is not susceptible of such easy definition, for the railways use some 9,075 of their own parcels and goods motor vehicles (including 2,803 mechanical horses), and also have large investments in some important firms of goods hauliers. The four main-line companies have invested (in equal shares of £335,749 each) £1,342,996 in Carter, Paterson & Co. Ltd., and £840,284 in Hay's Wharf Co. Ltd. The L.N.E.R. holds £84,808 in Currie & Co. (Newcastle) Ltd.; and the L.M.S.R. £124,939 in Wordie & Co. Ltd., and £71,761 in Joseph Nall & Co. Ltd. Some £3,825,277 is accounted for by railway-owned parcels and goods road vehicles and £2,670,090 by garages and stables; these figures, added to those of investments in goods hauliers, make a grand total of £8,960,155.

18,000 Unsafe Road Vehicles

Replying in the House of Commons on Wednesday afternoon to a motion, the Minister of Transport said that inspection of commercial motor vehicles for 12 months to March last showed that 18,000 vehicles of this class had such defects as to render them mechanically unsafe. Out of 560 specially observed brake tests, in 240 cases braking efficiency was under 30 per cent., in 180 cases under 25 per cent., and in 130 cases under 20 per cent. "One is appalled," he added, "if one wonders what must be the conditions of the brakes of the nearly 2,000,000 private vehicles that are not subjected to such tests."

National Negotiating Machinery for Busmen?

THE establishment of the Bus Federation—an organisation representative of the National Union of Railwaymen and the Transport and General Workers' Union, to which reference was made in our issues of February 5 and 19, is a move of some significance. Further, the new body has lost no time in defining what it seeks. The first conference of the new federation, held last month, resolved to take the necessary steps to set up national machinery on an industrial council basis covering bus workers. This desire for machinery is not hastily conceived. In the tramway industry of the country, a joint industrial council has been in existence since 1919, while a National Joint Conciliation Board for the goods side of the road transport industry was established, with the aid of the Ministry of Labour, early in 1934. Further, the four main-line railway companies have substantial holdings in many of the large passenger road transport undertakings and, as is well known, there exists, for practically every section of railway staff, what is generally regarded as a model machinery of negotiation.

It is not to be wondered at, therefore, that the trade unions catering for bus workers should have decided that the time is ripe to seek to establish suitable machinery, on a national basis, for the purpose of discussing national and local matters affecting such staff. At one time the Transport and General Workers' Union was looked upon as the only trade union in the industry and its efforts were not always recognised by employers. Active organisation by the National Union of Railwaymen, however, eventually brought about three important things: first, a "demarcation" understanding between the two unions whereby the large bus companies were divided between the two unions (roughly according to preponderance of membership) to avoid competitive canvassing; then, recognition by certain of the leading employers; and then, the negotiation of local or district agreements as to wages and

conditions of employment. The establishment of the new federation is therefore in natural sequence to the foregoing events, but there may well be many difficulties to be overcome before the ideals expressed in the five resolutions passed at the Leeds conference can be achieved. Not the least knotty problem lies in the fact that the operators themselves are not organised on a national basis. This, of course, was one of the difficulties involved in the establishment of machinery for goods road transport, and which is still engaging the minds of some employers in that industry; although the bus industry is better organised than the freight side of road transport, the structure is still far from including in one group the whole country.

It cannot be gainsaid that good does result both to the employer and the employee when appropriate machinery exists for the discussion of questions of mutual interest. Precipitate action in the case of dispute is avoided so long as the parties feel in honour bound to discuss the issue through channels which both sides have agreed to create. There is, of course, a price to be paid when employers agree to the principle of collective bargaining on wage issues, but it is a price usually worth paying—as witness, in those industries where machinery of negotiation exists, freedom from disputes of a grave nature, as well as the active presence of that most valuable co-operation which results from appreciation and understanding of an opposing view.

Speaking at Leeds recently anent their request for new machinery, Mr. Marchbank, the President of the Bus Federation, said "the trade unions were not asking for anything of a revolutionary nature. They asked only for some means whereby the workers in the road transport industry would be dealt with in a more general way in respect of wages rates and conditions of work than was possible at the present time."

Railway Shareholdings in Passenger Road Transport

The four British main-line railways have invested nearly nine and a half million pounds in passenger transport undertakings with a view to securing co-ordination

THE comparative stability of the shareholding position of the main-line railways in provincial bus companies is shown by the fact that only detail changes are necessary (as compared with 1935) in the tabulated information we give below. This has been prepared, as usual, from the annual reports of the four main-line railways for the year ended December 31, 1936, and shows the nature and amount of the shareholding interests at the end of the year, and the earnings during the year. The total sums invested in associated bus undertakings and total earnings are as follow:—

	Investment			Earnings, 1936		
	£	s.	d.	£	s.	d.
L.M.S.R.	3,001,521	1	10	260,947	4	0
L.N.E.R.	2,353,466	15	3	224,631	13	2
G.W.R.	2,254,095	7	7	173,588	16	9
S.R.	1,859,283	7	10	—	—	—
	9,468,366	12	6			

The totals of investments shown are the actual amounts of cash spent on the purchase of the shares (or in a few cases the valuation of the assets sold for shares) and therefore these figures do not agree with the sum of the holdings shown in the table below, as the shares were acquired originally at figures other than their par value.

It is not possible from these figures to arrive at the percentage return per annum, as some of the revenue relates to capital held for part of the year only. In the case of the L.N.E.R. dividends and other sums received during the year amounted to £232,201, representing a return at the rate of 9.87 per cent. (compared with 8.76 per cent. in 1935), but the total income is equivalent to an annual return of 10.01 per cent.

The chief capital-expenditure acquisitions in shares of bus companies made by the railways during 1936 were: L.N.E.R. to the Lincolnshire Road Car £7,823 1s. 8d., to the Trent £14,846 5s. 7d., and to the United Automobile £1,063 7s. 8d.; G.W.R. to the Crosville £18,116 0s. 0d., and to the Western National £164,825. The L.M.S.R. spent £30,000, but the accounts do not detail the holdings concerned.

Issued ordinary share capital increases during 1936 were: Birmingham & Midland to 1,200,000 (from 1,000,000); Crosville 1,100,000 (955,000); Cumberland 150,000 (125,000); East Midland 156,250 (125,000); Hants & Dorset 400,000 (320,000); Hebble 120,000 (100,000); Lincolnshire 149,981 (125,000); Maidstone 750,000 (416,620); Ribble 800,000 (600,000); Southdown 750,000 (426,250); Southern Vectis 75,000 (55,000); Southdown 375,200 (268,000); United Automobile 1,107,422 (984,375); Western National 1,783,576 (1,453,926); West Yorkshire 607,500 (540,000); Yorkshire Traction 300,000 (250,000); and Yorkshire Woollen 440,000 (400,000).

Associated Company	Issued Share Capital	L.N.E.R.		L.M.S.R.		G.W.R.		S.R.
		Holding	Earnings	Holding	Earnings	Holding	Earnings	Holding
		£	£ s. d.	£	£ s. d.	£	£ s. d.	
Aldershot & District Traction Co. Ltd.	200,000 Ord.							•
W. Alexander & Sons Ltd.	200,000 Ord.	50,000	25,000 0 0	50,000	25,000 0 0			
	700,000 6% Part. Pref.	175,000		175,000				
Birmingham & Midland Motor Omnibus Co. Ltd.	1,200,000 Ord.			360,000	45,000 0 0	240,000	30,000 0 0	
	100,000 8% Cum. Pref.							
City of Oxford Motor Services Limited	141,750 Ord.					70,875	9,205 2 7	
	74,000 6½% Cum. Pref.							
Crosville Motor Services Limited	1,100,000 Ord.			412,071	31,408 3 0	137,357	10,414 17 9	
Cumberland Motor Services Limited	150,000 Ord.			49,999	4,583 5 0			
Devon General Omnibus & Touring Co. Ltd.	200,000 Ord.					40,917	5,114 12 6	
	150,000 7% Cum. Pref.							•
Eastern Counties Omnibus Co. Ltd.	672,069 Ord.	163,243	11,427 0 2	22,419	1,569 6 7			
	200,000 5% Cum. Pref.							
Eastern National Omnibus Co. Ltd.	700,000 Ord.	175,000	14,000 0 0	175,000	14,000 0 0			
East Kent Road Car Co. Ltd.	350,000 Ord.							•
	200,000 6½% Cum. Pref.							•
East Midland Motor Services Limited	156,250 Ord.	52,083	5,208 6 0	26,042	2,604 4 0			
East Yorkshire Motor Services Limited	240,000 Ord.	119,490	11,949 0 0					
Hants & Dorset Motor Services Limited	400,000 Ord.							•
	150,000 6½% Cum. Pref.							•
Hebble Motor Services Limited	120,000 Ord.	15,000	1,875 0 0	45,000	5,625 0 0			
Highland Transport Co. Ltd.	35,000 Ord.†			14,875	656 5 0			
Lincolnshire Road Car Co. Ltd.	149,981 Ord.	47,941	4,575 3 11	11,987	1,144 10 2			
Maidstone & District Motor Services Limited	750,000 Ord.							•
	200,000 6½% Cum. Pref.							•
Northern General Transport Co. Ltd.	554,053 Ord.	243,815	24,381 10 0					
	300,000 6½% Cum. Pref.							
North Western Road Car Co. Ltd.	600,000 Ord.	99,555	12,444 7 6	199,110	24,888 15 0			
Ribble Motor Services Limited	800,000 Ord.			352,987	32,187 19 0			
	200,000 6½% Cum. Pref.							
Scottish Motor Traction Co. Ltd.	858,434 Ord.	214,609	21,460 13 0	214,608	28,406 17 10			
	1,000,000 6½% Cum. Pref.			106,863				
Southdown Motor Services Limited	750,000 Ord.							•
Southern National Omnibus Co. Ltd.	542,200 Ord.							•
Southern Vectis Omnibus Co. Ltd.	75,000 Ord.							•
	15,200 6% Cum. Pref.							•
Thames Valley Traction Co. Ltd.	130,000 Ord.					51,115	3,833 12 6	
Trent Motor Traction Co. Ltd.	375,200 Ord.	51,898	4,265 5 0	103,797	8,534 11 7			
United Automobile Services Limited	1,107,422 Ord.	542,958	59,706 16 3					
	150,000 7% Cum. Pref.	39,382						
Western National Omnibus Co. Ltd.	1,783,576 Ord.					891,788	96,750 11 5	
	400,000 6% Cum. Pref.							
Western Welsh Omnibus Co. Ltd.	348,000 Ord.							
West Yorkshire Road Car Co. Ltd.	607,500 Ord.	151,078	14,268 9 0	151,078	14,268 9 0	174,000	18,270 0 0	
	200,000 6½% Pref.							
Wilts & Dorset Motor Services Limited	100,000 Ord.							•
Yorkshire Traction Co. Ltd.	300,000 Ord.	73,567	7,069 16 4	73,567	7,069 18 10			
	24,350 7% Pref.	4,661		4,662				
Yorkshire Woollen District Transport Co. Ltd.	440,000 Ord.	73,334	7,000 1 0	146,666	13,999 19 0			

* The Southern Railway investments in passenger road transport undertakings are not charged to capital account and so do not appear in detail in the annual accounts. In most cases the Southern Railway holds approximately 30 per cent. of the issued share capital, but the proportion is about 50 per cent. in the cases of the Southern National (271,100) and Southern Vectis companies, and about 20 per cent. in the case of the Devon General concern, where the G.W.R. holds about 30 per cent.

† Highland Transport Co. Ltd. shares are 17s. each. The L.M.S.R. holds 17,500 ordinary shares.

Overseas Notes

Co-ordination in Algeria

It is expected that complete co-ordination of railways and road services in Algeria will be a *fait accompli* by the end of the present year. Doubtless the steps already taken to this end have been greatly facilitated by the comparative prosperity of both road and rail within the last few years, for the receipts of both systems of transport show considerable increases in passenger traffic during the past five years, and in 1936 the figures were higher than the previous record registered in 1929, when the Algerian centenary celebrations were in progress. In 1930 an important programme of railway modernisation was taken in hand, and in 1934 new fares were initiated throughout the railway system in order to put road and rail charges on an equal footing. These measures had the immediate effect of increasing passenger traffic, which rose from 5,760,000 persons in 1932 to 9,935,000 in 1935.

A happy idea on the part of the railways was to persuade road transport concerns that it was to their own benefit to co-operate. In consequence an agreement was reached to reduce the number of road services, and then the long-distance road services were bought out in accordance with a plan entrusted to one central body. This stage of the reorganisation, begun in April last year, was finished on August 1. The withdrawal of the very long-distance road services from Algiers to Oran, Saint-Arnaud, Constantine, and Bône has passed over to the railways an important traffic and, at the same time, has enabled the owners of the purchased road services to spend the compensation money on buying up other competing services. The second stage, which has just been begun, consists in taxing all public passenger transport services, closing certain railways and suppressing—with compensation—road services running parallel to railways.

French Co-ordination Schemes

Under the provisions of the French legislature for rail and road co-ordination, the Ministry of Public Works has been approached by the P.L.M. and P.O.-Midi systems with a scheme for the abandonment of a total of 16 unprofitable branch lines. This proposal, which is hailed by the French press as the first practical attempt at rail and road co-ordination on the part of the main-line railways, affects the following lines:—

P.L.M. RAILWAY

Branch (and Département interested)

Firminy-Saint-Just-sur Loire (Loire).
Tassin-Givors (Rhône).
Valence-Romans (Drôme).
Bourron-Malesherbes (Seine-et-Marne).
Sens-Montargis (Yonne, Loiret).
Auxerre-Gien (Yonne, Loiret).
Alès-L'Ardoise (Gard).
Darsac à Saint-Georges-d'Aurac (Haute-Loire).
Ambérieux-Montalieu-Vercieu (Ain).

P.O.-MIDI RAILWAYS

Castelsarrasin-Beaumont-de-Lomagne (Tarn-et-Garonne).
Lexos-Montauban (Tarn-et-Garonne).
Sète-Montbazin-Gigean (Hérault).
Sarlat-Gourdon (Lot, Dordogne).
Foix-Saint-Girons (Ariège).
Doyet-la Presle-Bézenet (Allier).
Mussidan-Riberac (Dordogne).

The abandonment of the Bully-Grenay-La Bassée line, which serves the Compagnie des Mines de Bethune, has also been mooted, and it is understood that the other large French railway systems—both State and company—are preparing similar programmes for the complete replacement of both passenger and goods services on certain branch railways.

South African Results

According to the report of the South African Railways and Harbours for the year ended March 31, 1936, the route mileage over which road motor services were operated by the administration amounted to 11,292 miles (inclusive of 108 miles operated on behalf of the Rhodesian Railways), a net increase of 321 miles during the year. The revenue derived from these services was £496,781, or £13,020 more than for 1934-35. Expenditure amounted to £429,916, leaving a surplus of £66,865. There was a considerable increase in the number of passengers and freight tonnage following a reduction in rates. The total traffics, with the improvements shown in brackets, were as follow: passengers, 2,605,803 (450,560); goods, 421,810 tons (26,264 tons); cream, 1,377,815 gal. (369,735 gal.). Nevertheless, the revenue per vehicle mile fell to 19·4d., a decrease of 2·7d. on the figure for the previous year. Expenditure per vehicle mile, on the other hand, was reduced by 2·6d., but this was offset by arrears of maintenance. The number of vehicles in service was 677 (433 motor vehicles and 244 trailers) as against 600 in 1934-35, and the vehicle miles run were 6,141,763. In all, 102 new bodies were built and placed in service during the year; 75 of these were constructed in motor repair shops, five by the Mechanical Department, and 22 by outside firms. Up to the end of the year under review, ten all-steel passenger bodies and six all-steel dual and tri-compo bodies, designed and manufactured by outside firms, had been placed in service. The total value of the vehicles and equipment was £853,638.

A summary of the fleet of vehicles operated is given in the table below.

	Six-wheeled	Four-wheeled	Total
	No.	No.	No.
<i>Passenger vehicles—</i>			
Thornycroft	1	24	25
Albion	1	9	10
White	3	8	11
Leyland	1	5	6
Others	7	11	18
Totals	13	57	70
<i>Combined goods and passenger vehicles—</i>			
Thornycroft	176	12	188
Albion	2	4	6
White	4	7	11
Henschel	8	—	8
Leyland	6	2	8
Totals	196	25	221
<i>Goods vehicles—</i>			
Thornycroft	104	13	117
Albion	—	1	1
White	1	—	1
Henschel	4	—	4
Leyland	4	4	8
Others	5	6	11
Totals	118	24	142
<i>Trailers—</i>			
2 tons	—	91	91
4 and 5 tons	—	137	137
7 tons	—	16	16
Totals	—	244	244
Grand totals	327	350	677

Mechanical Department of a Great Carrying Firm

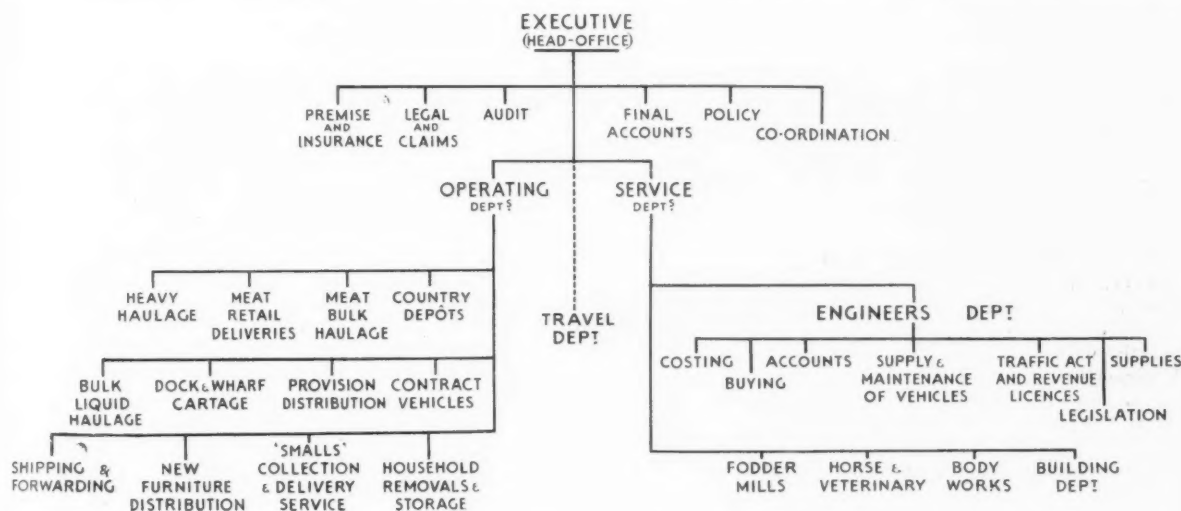
Details of the Engineers' Service Department of Pickfords Limited

THE organisation of the firm of Pickfords Limited is divided under three main headings: (a) Executive and Administration; (b) Service Departments; and (c) Operating Departments. In previous issues we have published details of some of the operating departments and these are now supplemented by similar details of the Engineers' Service Department. The accompanying genealogical diagram of the company's organisation shows clearly that under the three main headings there are several subdivisions, and this permits of appreciating at a glance the wide scheme of activities involved, and how the various operations are divided.

Naturally the ramifications of a concern of this character necessitate the use and consequent maintenance of a

accommodation. The engineering department's main office is in a building adjoining the workshop in which vehicles are overhauled. Running repairs are undertaken in the main workshop, more especially at night.

The area of the workshop proper is 9,400 sq. ft. and the layout is shown in one of the accompanying illustrations. Apart from other more important considerations, this small area necessitates a very speedy turn out of overhauls. The small portion of the yard below this workshop is used for cleaning, and for housing a tyre press and tyre stores. The system by which vehicles are advised and accepted for overhaul is as follows: Records are kept of mileage run between overhauls, and there is also a history sheet of work done during this period, but vehicles are



Pickfords organisation chart

large fleet of motor vehicles of many types and sizes in such a state of efficiency that the reputation for reliability of service enjoyed by the owning company shall be unimpaired by failures on the road and delay in the conveyance and delivery of consignments. The engineers' service department is responsible for the supply of the requisite vehicles to the operating departments; the issue and supply of all necessary for running and operating the vehicles, with the exception of providing the drivers; and purchasing, costing, and undertaking many and varied activities pertaining to the running of the vehicles. The engineer's department also undertakes the maintenance of the vehicles in a sound mechanical condition and of the plant in the repair shops and warehouses not undertaken by the Building Department.

To acquaint ourselves with the methods employed at one of the principal motor repair shops belonging to Pickfords Limited, we recently visited the establishment at 42, Long Lane, Borough, S.E.1 which has been in existence for about 16 years. These premises were originally built for their present purpose, namely, accommodating the engineering service department. At the same address is a large yard and bank used by three of the Pickfords operating departments, and also warehouse and office

brought in for overhaul following upon and mainly as a result of need revealed by detailed inspection, governed by the mileage run during the period which has elapsed since the previous overhaul; there is thus no arbitrary overhaul on either a mileage or time basis. The Engineers' Service Department controls the whole of the motor fleets of all the Pickfords operating departments, and is further available to subsidiaries for overhauls, reconditions, and running repairs, provided that the locality is suitable for the last-named service.

Main Repair Shop and Overhaul Processes

The main repair shop, of which illustrations are reproduced, has facilities for everything pertaining to the maintenance of road motor vehicles with the exception of crankshaft grinding and of major electrical repairs such as armature rewinding. This main workshop serves the whole of the country, either by means of the vehicle requiring complete reconditioning being sent normally to London with a load, or by the despatch of reconditioned units to outlying running repair shops for installation; in the latter case the old units removed are then returned to the main workshop for recondition.

It is, of course, of great importance that matters should

be so arranged that the periods during which any vehicle is under repair should be reduced as much as possible. Reconditioning of vehicles is carried out at these works by the use of spare units (gearbox, engine, back axle, and similar components), so that, provided spare bodies are available, a vehicle can be completely reconditioned in 24 hours. The recent tendency, however, to allot a short life to vehicles so as to obviate, amongst other things, this reconditioning, is having a marked bearing on original methods. In other words, instead of retaining a vehicle in service for several years during which there is, naturally, progressive deterioration in its condition, the plan now adopted is that of replacing vehicles more frequently by others of later and improved types. This system undoubtedly results in ultimate economy and a higher standard of reliability, besides constituting a less costly basis of maintenance and improving road performance.

Briefly, the overhaul process is as follows: Remove body at the body works and dismantle chassis in the workshop; execute frame repairs as necessary; rebuild chassis with spare units reconditioned and made available prior to the commencement of overhaul; test chassis and return it to the body works to have mounted a spare body already repaired and repainted, or, alternatively, to be fitted with the original body if time has permitted its necessary repair. Generally, in cases where spare bodies are used, the chassis is painted after fitting a body, and always painted with the body when the original is refitted. The old units such as engine, steering, gearbox, and so forth, removed during overhaul, are in turn reconditioned so as to be available for the next chassis of similar make and type to require overhaul.

Costing and Work Progress Systems

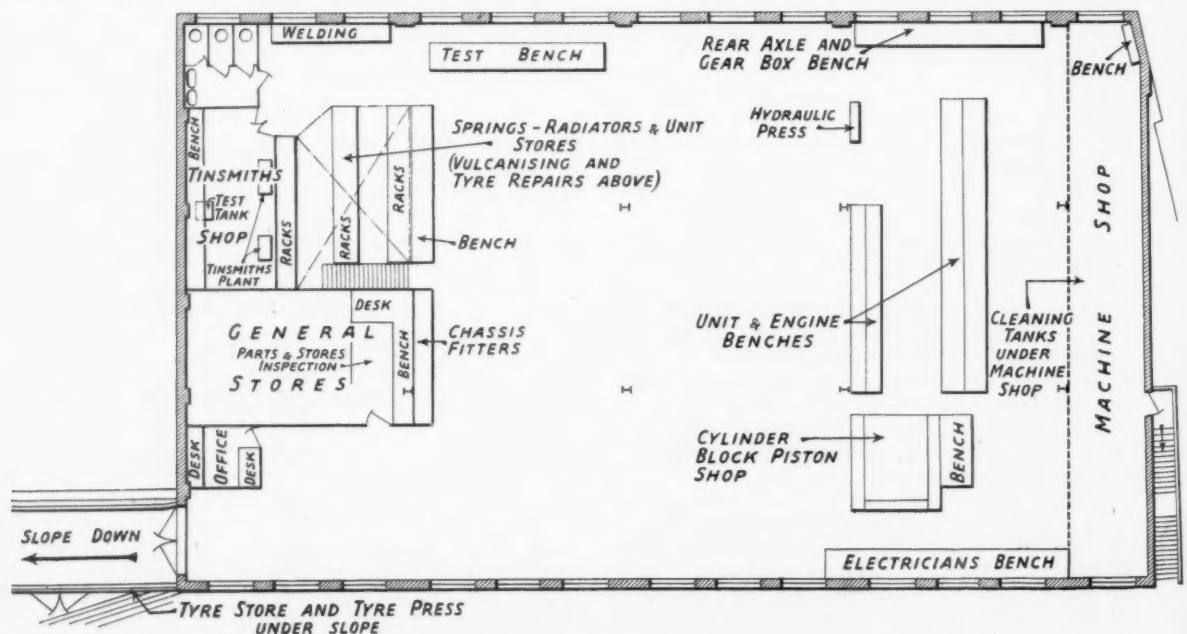
Every vehicle in the fleet of Pickfords Limited has its own individual costs of the most comprehensive kind, and at the end of the week an operating department knows exactly what each vehicle has cost for that week. The Engineers' Service Department renders to every operating section a list of vehicles on the operating strength, showing the cost of petrol, oil, tyres, repairs, depreciation,

insurance, washing, and numerous other items. Without this knowledge it would, of course, be very difficult, if not impossible to keep as close a watch as is necessary upon the cost of maintaining and running the vehicles.

The repair shop at Long Lane has been laid out and the plant installed with a view to the work progressing in proper sequence. The vehicles coming in for repair enter the yard from the main road and reach the higher level of the workshop by an inclined way, after which they are manoeuvred into the required position in close proximity to the appropriate plant. Apart from plant generally found in a main repair shop, such as drilling machines and lathes, special plant is installed for use in a number of rather interesting processes.

Cylinders are honed out with a reciprocal honing machine by the Hutto Machine Tool Company. When sleeves are fitted they are inserted into the honed-out bore of the cylinders by reducing their temperature, and therefore their diameter, as a result of dipping the sleeves into liquid oxygen. The shrinkage is so great with the extremely low temperature of the liquid oxygen (approximately minus 187 deg. C.), that the sleeves literally fall into the bore of the cylinders. They quickly return to their normal temperature and expand in the cylinders, and are then such a good fit in the bore as to make it necessary to exert a pressure of 10 to 15 tons for their removal. This process of sleeving prevents the breakage and distortion which often follows the old method of pressing in the sleeves with a hydraulic press. The chilling method also allows the sleeves to be fitted much tighter in the bores. Valve seat inserts are also fitted by the same process.

A surface grinding machine is used for the correction of distorted cylinder heads and many other jobs, as well as a magnetic crack detector sufficiently large to accept any motor parts. In view of the fact that pistons give long service for many years, a process whereby old pistons are re-machined to other and smaller standards has been used by Pickfords for some considerable time. It is found that pistons reconditioned in this way give better service than new ones, as during the first period of use



Layout of the repair shop at Long Lane depot, Borough



Long Lane depot with ramp (on left) to main repair shop, and loading bank on right



Two views of work in progress in the Pickfords main repair shop, Long Lane

they have undergone all the maturing and distortion that is likely to occur. A piston turning and grinding machine is used for reconditioning these pistons.

The standard oversize bores set for the majority of makes are: 0.015 undersize and from 0.015 to 0.030 oversize from standard and it is possible that a piston removed from the last standard may be reconditioned and used many times. Incidentally the possibility of employing a 6-cylinder engine with different cylinder sizes has been discussed, so that when the bores become worn they could be honed out to a standard which would allow a larger size piston to be used again, and thus only one or two new oversize pistons require to be purchased.

Engine Test Bench and Equipment

Engines when rebuilt are installed in a test bench constructed by Pickfords from units taken from old and obsolete vehicles. The bench consists of a long frame on suitable supporting legs, on which is mounted a 38 h.p. Tilling-Stevens engine with radiator, driving a dynamo, and, through various switch gear this in turn drives an electric motor; both these latter units are taken from the same make of vehicle. Engines for test are coupled up through universal joints to the electric motor so that the engine can be rotated at various speeds and for varying periods—generally about four hours—which constitutes its initial running-in period. The wiring of the switch gear is so arranged that the electric motor can be converted into a generator, and the engine for test running under its own power can thereby be put under load. Engines are generally run under a light load for four hours, fol-

lowed by a full load test for about one hour; during the latter period the horsepower output and consumption are obtained, and minor adjustments are made. To ascertain the horsepower, the converted generator is pivoted by means of levers and is coupled to a spring balance from which the engine torque can be read; and, for loading the converted generator, a variable iron grid resistance is used together with a vernier water resistance. Output meters are also fitted to the test bench switchboard so that, with knowledge of the efficiency of the generator at various speeds, a simple calculation of electrical output checks the results obtained by the balance method.

The bench is equipped with flow meter, revolution counter, &c., and all special fuels and fitments are tested on this bench, with the result that the vast majority get no further than this stage of testing. Again, through the various switch gear, the Tilling-Stevens engine and its generator are available for use as an electric welding plant. Incidentally, in cases of breakdown of electric supply for lighting purposes of the whole of the garage, warehouse, and banks at Long Lane, this plant has been coupled up and operated as a standby generator for long periods at a time.

The plan on page 488 shows the general layout of the first floor of the building which constitutes the engineer's workshop, stores, and works offices, and from this it will be seen how the plant is arranged in accordance with the repair scheme followed. In subsequent articles we hope to describe the body building and repair shops, in which painting is undertaken, and also the forage mills—another service section of Pickfords Limited.



Time office, exterior of stores, and chassis fitters' bench at Long Lane

An Anglo-Scottish Coach Service

How the S.M.T. uses Leyland luxury coaches on a limited-stop night service between London and Edinburgh during the winter months

COACH travel for distances over 250 miles has so far not enjoyed great popularity in this country. Indeed, the geography of the country gives little scope for such services, and among those who choose to travel by road there is not an extensive demand for really long-distance services. This is reflected in the fact that receipts from express coach services according to the latest returns average only 37-03d. per passenger journey. There are, however, a few popular services of over 250 miles, and outstanding among these are the two Anglo-Scottish services maintained throughout the year by the Scottish Motor Traction Co. Ltd. and the Western S.M.T. Co. Ltd. between London and Edinburgh and London and Glasgow respectively. During the summer months both day and night services are operated daily on each route in both directions, but during the winter only night services are maintained.

An innovation which gives special interest to the east coast route is the introduction of a fleet of six new 22-seater Leyland Tiger-type vehicles for the winter service. These have now been in operation for several months, during which time it has been possible to gauge the success of this experiment in using comparatively small vehicles for long-distance travel. For the ordinary summer services and at such holiday times as Christmas when bookings call for duplicated services it is necessary, of course, to use larger vehicles seating at least 28 persons, but for winter services the new Tigers seem amply to have justified themselves.

They provide a more than usually generous space for passengers, and the luggage area is probably the largest per passenger allowed on any vehicle at present in service in this country. The seats which, incidentally, are of the armchair type, are arranged on each side of the gangway with eight double seats on the offside and six single armchair seats on the near side. There is a rear entrance, and behind this is fitted the toilet accommodation which is essential if the limited stop feature of the service is to be maintained. On the present night schedule only two 20-minute stops are made, at Darlington and Grantham respectively, and an arrangement with local cafes ensures a quick service of light meals at both these stopping places. This enables the coaches to maintain a 14-hour schedule, involving an average speed of 26 m.p.h. for the whole journey. The coaches, incidentally, are fitted with radio equipment.

In order to comply with the regulations governing drivers' hours a small depot has been established at Greenlaw, some 40 miles south of Edinburgh. The arrangement is that two new drivers board the London-bound coach at Greenlaw, just under 14 hours from London, and take it on until they meet the coach from London half-way along the route and transfer to it. When they arrive back in Greenlaw they have shared a spread-over of approximately 14 hours, so that they have their 10 hours rest in Greenlaw and are ready to start again at the same time in the next 24-hour period. The total driving time of each driver amounts to 6 hr. 45 min., and for the rest



Loading a Leyland Tiger at Edinburgh

of the time he is travelling, not as a conductor but as a non-fare-paying passenger, in a compartment of his own on the nearside of the full-fronted cab and separated from the working driver by a glass partition which discourages unlawful communication between the two. More efficient working, in the company's estimation, is promoted by each driver returning to his own home for his off-duty 10-hour period.

Servicing of the machines is carried out both at London and Edinburgh in the 10-hour layover period if it has not been possible to spare the particular machine from an immediate return trip. The ideal is to keep one machine at each end lying over in case of emergency, but the principle is honoured more in the breach than the observance, and all six are kept running almost continuously in the winter on the regular services, and continuously in the summer as duplicates. A simple calculation will show that maintaining the bare winter service alone without any duplicates with six machines means that every one must cover 900 miles a week at least, and in the summer the weekly mileage is naturally far greater.

MANCHURIAN NATIONAL HIGHWAYS ROAD SERVICES.—In 1932 the Manchukuo government evolved a ten-year plan for the construction of 60,000 km. (37,283 miles) of national highways. At that time roads available for motor traffic totalled only 13,000 km. (8,078 miles). By the end of June, 1935, some 58 of the new state highways had been constructed, providing a further 6,804 km. (4,228 miles). The public transport services on these new highways have been entrusted to the Manchukuo State Railways Administration. At the present time some 15 bus routes are being operated over 5,000 km. (3,107 miles) by a fleet of 400 buses employing 700 men. These routes are being maintained not so much as a source of revenue, but as a means of opening up the hinterland and supplementing the rapidly expanding railway services.

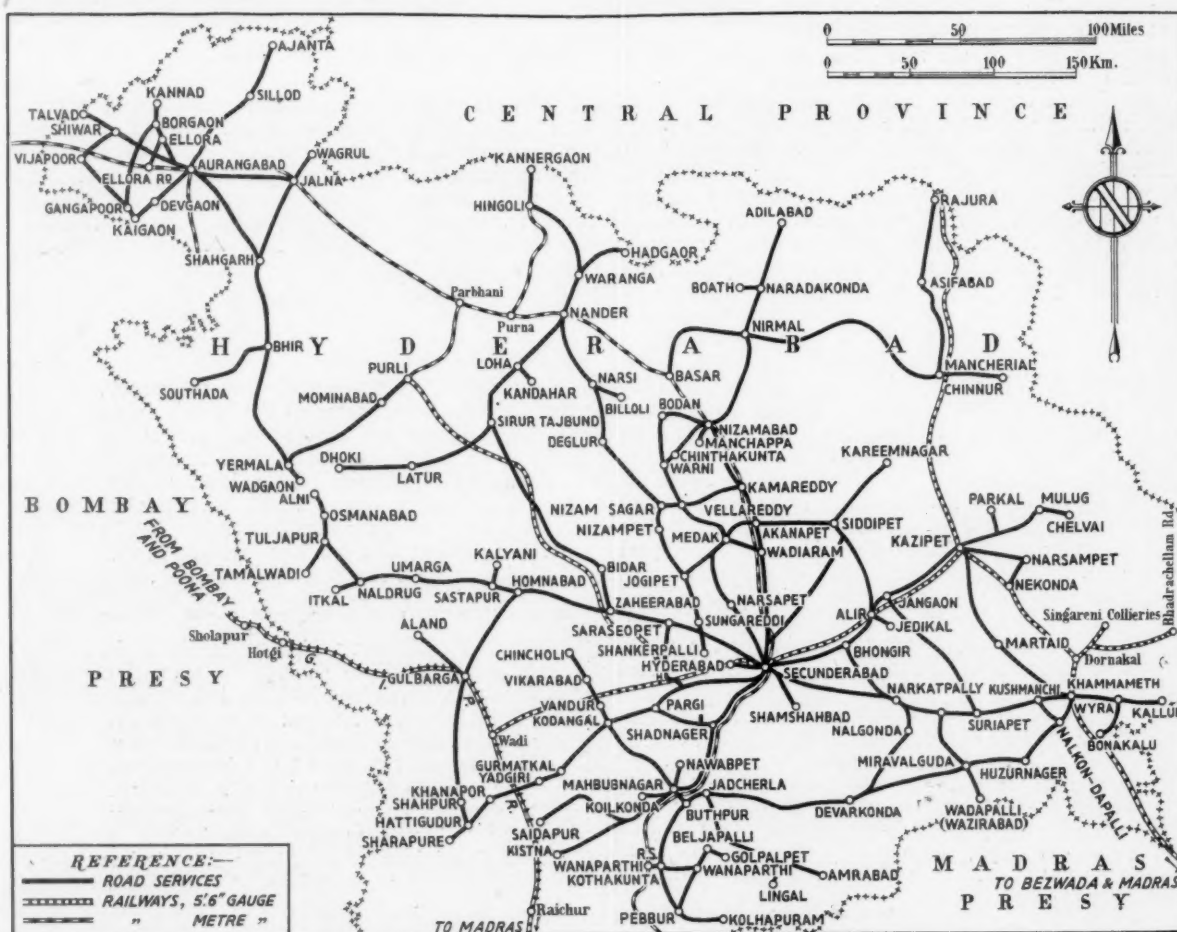
Co-ordinated Transport in Hyderabad

British personnel and vehicles are playing prominent parts in the comprehensive arrangements being carried out by the Nizam's State Railway

A NOTIFICATION issued by the Nizam's Government, referred to on page 854 of our issue of November 20 last, stated that the rapid growth of motor transport during the last five years had necessitated the enforcement of rules under the State Motor Vehicles Act to regulate the registration and licensing of motor vehicle transport. It is intended that the passenger road services of the Nizam's State Railway will eventually replace all private services, excepting those in Hyderabad City, and, although that state of affairs has not yet been reached, the Government already has reason to be proud of the success of its venture in co-ordinating rail and road services within the Nizam's dominions. In opening, in 1932, experimental road services of its own with a monopoly over certain selected routes, the Nizam's State Railway gave the lead to other railways in India. The financial results of the services have been sufficiently encouraging to justify a progressive policy of expansion, and at present 1,411 miles of road are being operated with 89 vehicles of up-to-date types. It is proposed to increase these figures to 3,825 miles and 235 vehicles during the present financial year.



An Albion bus on a route linking outlying points with the Nizam's State Railway



Sketch map showing the road and rail routes of the Nizam's State Railway

The basis of the State transport system is the railway, and some idea of the development in that sphere may be gained from the realisation that when the present ruler ascended the throne, the State possessed only 743 miles of railways, whereas at present there are 1,350 miles of railway lines owned and worked by the State. Of this total, some 690 miles are of 5-ft. 6-in. gauge and 660 miles are metre gauge. During the present reign, nearly 4,000 miles of roads have been added, and the construction and improvement of roads and the introduction of mechanical transport services have contributed considerably to improving the economic and social life of the people. This plan ensures the development of roads as feeders to the



A 32-seat bus on an Albion Valkyrie chassis



Interior of Brush-built body with chair frames in position

railway from areas which the railway cannot serve at present on account of comparatively low density of population and latent economic resources.

British equipment is used for the road services of the Nizam's State Railway, and Albion Motors Limited—to quote but one example—has recently delivered its eleventh repeat order.

It will be recalled that on October 17 last, Mr. A. J. Pragnell, who has had considerable experience in the Road Transport Department of the G.W.R., resigned from the service of that railway to take up an appointment as Deputy General Manager of the Nizam's State Railway and to undertake the development of the railway-owned road transport services.



A 32-seat Leyland Lion bus, with all-metal body by the Birmingham Railway Carriage & Wagon Co. Ltd. For over three years a fleet of these vehicles has worked successfully in and around Hyderabad City

Karriers for Military Service

AT present a batch of 52 rigid-frame six-wheelers of the CK6-type for the War Office is going through the Karrier Works at Luton. These vehicles, which have successfully completed severe trials, are designed for cross-country work, but they have a distinct advantage over the ordinary roadless or semi-track type of machine, inasmuch as they are capable of maintaining quite considerable speeds on made roads. They carry a load of three tons over rough and broken country and when operating over roads this can be increased to five tons. The CK6 chassis, as supplied for military service, incorporates a six-cylinder engine developing 80 h.p. at 3,000 r.p.m., and, by virtue of special low gearing embodied in a five-speed gearbox, is capable of negotiating rough tracks, severe gradients, and loose surfaces with ease; incidentally, single lever control is employed in the five-speed box. Soft sand and boggy ground can be traversed successfully by employing chain tracks on the rear wheels. Rear axles are of the overhead worm type with fully floating driving shafts,

and the steel disc wheels are shod with 9 in. by 20 in. low-pressure tyres specially constructed for cross-country work. Bendix brakes, which operate within 16-in. diameter drums on all six road wheels are vacuum-servo assisted and can be applied either by hand or by foot. Driving and braking torque from axles is taken direct to the deep sectioned frame by means of universally-jointed torque rods which connect each driving axle to a stout tubular cross member of chassis.

The principal features of the chassis specification are as follow:—wheelbase 12 ft. 6 in.; body space 15 ft. 8 in.; ground clearance 10 in.; weight of chassis (unladen) 3 tons 15 cwt.; 30 gal. petrol tank; "Still" tube-type radiator with hand-operated shutters; compensated voltage control dynamo; dry plate clutch (12 in. dia.); gearbox fitted with mechanical tyre pump; axle ratio 10.33 to 1; lowest overall ratio 101 to 1 (3 m.p.h. at 3,000 r.p.m.); road speed in top gear (32 m.p.h. at 3,000 r.p.m.); and turning circle 54 ft.



Part of the batch of 52 CK6-type Karrier vehicles ordered by the War Office

Publications Received

Auto-Sprachbuch für Ausland-Fahrer: Deutsch-Französisch-Englisch-Italienisch. (Motor Phase Book for Drivers Abroad: German-French-English-Italian). By Prof. E. Pfohl. Stuttgart: Deutsche Verlags-Anstalt. 8½ in. x 5½ in. Price RM. 4.80.—This book, which should be bought by every motorist who tours abroad, contains the vocabulary and phraseology of motoring and motor vehicles with a technical accuracy and to an extent unequalled, so far as we are aware, by any other publication of its kind. Also, the volume is conveniently small, inexpensive, well printed, and easy to consult. The author wisely insists that the user must have some knowledge of the language before he can hope to use this or any similar book with any considerable success, but from a careful examination of Professor Pfohl's work we are satisfied that an absolute minimum of previous knowledge is demanded. It is inevitable that the first edition of a multi-lingual work of this kind should contain a few blemishes. For example, on page 71, top line, the word "idler" should be omitted, and on pages 144 and 145 some of the English equiva-

lents of "aufheben" may puzzle the user, and the entry 145/26 should read "to charge the battery." Again, on page 63, lines 3 *et seq.*, the term "motor hood" should surely be "bonnet"; and "jobs" or "operations" is the appropriate English centre heading on page 143. These, however, are minor points which do not detract appreciably from the practical value of the book. One of the principal difficulties in any multi-lingual work is to arrange for equal facility of use from and to any of the languages concerned. This has been accomplished very successfully in the present instance by a grouping of phrases under main headings such as coachwork, brakes, clutch, radiator, and wheels, with sub-headings of types, parts, defects, and so on. There are several admirably annotated plates, and a general index which enables the user to refer immediately to the desired pages. The list of contents might usefully be given in English, French, and Italian as well as German, and we do not understand why the valuable notes on traffic regulations in various countries (pp. 174 *et seq.*) are given only in German and French. We look forward to the issue of further editions of this book in which it may be possible to remedy the omissions noted.

A NEW AMERICAN STEAM RAIL MOTOR TRAIN

Consisting of two rebuilt passenger coaches and equipped with the Besler steam power plant

TOWARDS the end of last year the New York, New Haven and Hartford Railroad placed in service a two-car rail motor train operated by steam on the Besler system. For some time the company had been searching for a suitable unit for operation on a number of local main line and branch services which, prior to the introduction of the new unit trains, had been worked by a steam locomotive and three vehicles—a brake van and two coaches. What was desired was a self-contained unit having a seating capacity of approximately 150, with a small luggage space, the operating cost of which would be light and a sufficiency of power development assured; these requirements have been met by the type of motor train now used on this service. The train is operating in almost continuous service from 6.0 a.m. to 10.20 p.m., making six trips of 31.9 miles between Bridgeport and Waterbury, and one round trip of 126 miles between Bridgeport and Hartford each day, giving a total daily mileage of 317 miles.

The two steel coaches are not new; they consist of two passenger cars approximately 20 years old, and as remodelled their exterior appearance is comparable with that of the company's latest streamlined coaches. The cars were stripped down, lower deck roof plates and some details of the old deck framing removed to save weight, and other modernised features introduced. In the new design both saloons are placed at the same end. They are equipped with toilet and lavatory equipment, while the old seats have been replaced by new reversible ones, specially designed for the cars, having chromium-plated tubular frames with cushions upholstered in a blue figure plush. The interior cross section was radically changed, the old clerestory roofing being supplanted by a flat head lining running across the car just below the old lower-deck carlines. Modern aluminium basket racks were applied in place of the old brass ones, and the old heating system was completely removed, being replaced by thermostatically controlled radiators, and interlocked with an air-conditioning system. A centre duct air distribution is used, together with an electro-mechanical cooling system operated at 110 volts and driven from a separate 25-kW. generator and auxiliary engine located in one corner of the luggage room. The capacity of the air-conditioning unit in the power car is 5 tons, and in the trailer car 7 tons.

On the power car a compartment 8 ft. long at one end is reserved for the application of the Besler boiler plant and auxiliary equipment, and behind this is a luggage compartment 12 ft. in length. The entire length of 20 ft. over the boiler and luggage room on the roof is taken up by condensers and exhaust steam driven fans, and a number of special details of construction had to be worked out properly to carry the weight of this equipment, and also maintain the necessary strength across the sides of the car. One of the most difficult problems was met with in the streamlining of the ends. The driver's compartment had to be put in the streamlined end, and sufficient strength had to be worked into an end design that could be readily incorporated into the existing structure. The vestibules were entirely removed with the exception of the existing vestibule end sills. The bottom contour of the streamlined end was formed by a continuous angle tying into the side sill construction at the

back of the body corner post, and vertical channel sections were applied running from the bottom to the top between the window openings in the driver's compartment. By this and other means a very substantial and adequately protected driver's compartment was obtained. The necessary control apparatus is fitted in each compartment and the train is operated in either direction without turning. This duplicate apparatus is pneumatically operated.

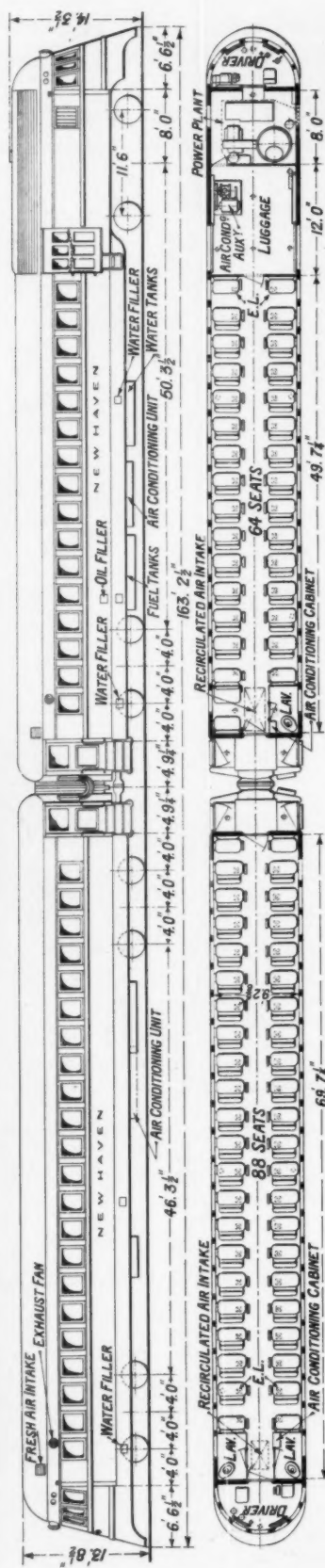
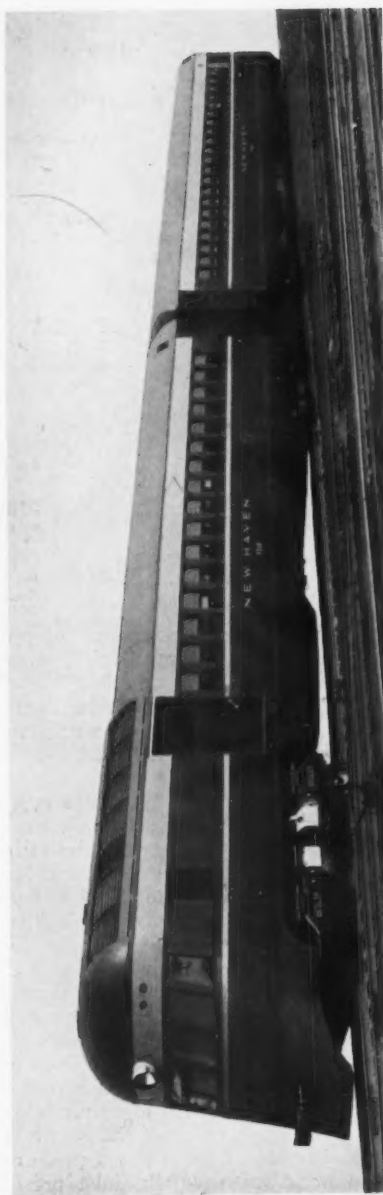


Interior of passenger saloon

The old bogie truck under the boiler end of the power car was replaced by the Besler power bogie, all other bogies remaining the same. The overall length of the power truck is 17 ft. 8 in., and the total width over the cylinder lagging cover is 9 ft. 5 in. The wheelbase is 11 ft. 6 in. and Simplex clasp brakes are used, with two brake cylinders mounted on the bogie truck.

The propelling mechanism consists of two 2-cylinder compound engines, each having cranks pressed on to extensions of the axle stub outside the journal bearings. The high-pressure cylinder is 6½ in. and the low pressure 11 in. in diameter, and a common piston stroke of 9 in. is employed. The engines are of the conventional double-acting compound pattern with piston valves, the cross-heads being cylindrical in shape and made of cast steel with babbit shoes. All the bearings are of the roller type, and all working parts are machined all over. The valve mechanism is Stephenson link motion, with pneumatic control giving two positions forward and two reverse. Lubrication is by splash within a sealed crankcase, and a circulating plunger pump is furnished to ensure lubrication at low speeds. The cylinder relief valves are air-operated. The engine is designed for a steam pressure of 1,500 lb. per sq. in., and, at 1,200 lb. inlet pressure,

A New American Steam Rail Motor Train



Top: The Besler steam motor train
Middle: General arrangement drawings
Right: The motor bogie

the power bogie has an average starting tractive force of 15,000 lb. The truck is rated at 1,000 h.p. although it is capable of producing more than this with a sufficient boiler capacity.

The boiler is of the continuous-flow non-water-level type. It has no drum or headers, but is a continuous tube from the boiler inlet to the throttle. The water enters at the top and passes down through a series of flat coils, where it is heated, and then boils in the helical coils at the bottom, surrounding the combustion space, afterwards passing to the superheater coils just above the firebox, and finally emerging as superheated steam. The boiler is equipped with fully automatic safety devices for protection against empty water tanks or other contingencies. It is 4 ft. in diameter and 6 ft. 5 in. in height. The minimum tube diameters are $\frac{3}{4}$ in., and the maximum $2\frac{1}{4}$ in.

The oil burner is of the pressure atomising type, of special design and construction. It automatically meters the fuel in proportion to the flow of air delivered by a multivane type blower. Adjustment is not necessary with changes of altitude or draft pressure, and the burner automatically compensates for changes in air flow caused by entering tunnels, high speeds, or any cross winds.

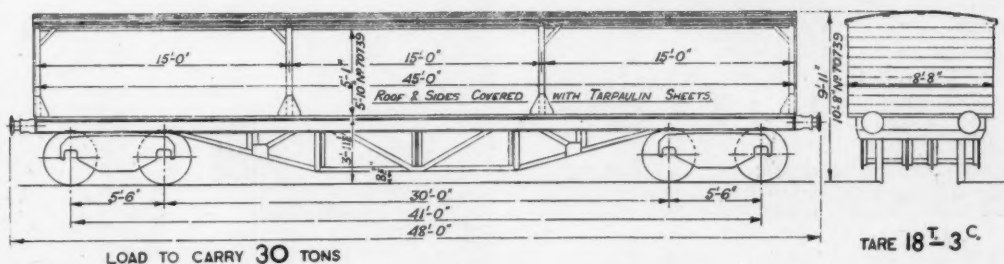
In every case it meters the correct amount of fuel. The burner operates fully on or off, and ignition is secured by a high-tension electric spark. The auxiliaries are driven by a two-cylinder 90-deg. V-type double-acting steam engine in which the water pump drives are integral with the main crankshaft. This auxiliary steam engine drives the electric generator through V-belts. The generator supplies current for lighting, ventilating, and for the requirements of the power plant; the auxiliary engine also drives the air compressor and the forced-feed main engine lubricators. It operates at a back pressure and exhausts into the train heating line. When train-heating is in use the power used to drive the auxiliaries represents only 2 per cent. of the boiler output.

The condensers, on the roof of the car, are of the fin and tube type. Propeller-type fans driven by individual exhaust steam turbines of Besler design and manufacture are located adjacent to the condenser cores on the roof, and draw air through the cores, discharging it upward. The turbine speed inherently varies in proportion to the steam flow, producing the optimum relation between air flow and condenser load at all outputs. The general layout of the unit train and interior arrangements are shown in the accompanying drawings.

G.W.R. Vehicles for Exceptional Loads—III



COVERED TRUCK FOR MOTOR CAR BODY TRAFFIC



Nine standard size bodies can be accommodated in this truck, secured to longitudinal baulks running the whole length of the floor

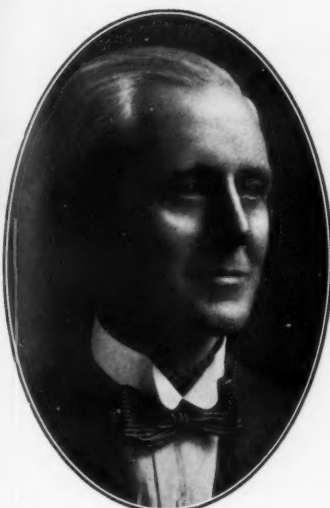
RAILWAY NEWS SECTION

PERSONAL

The forthcoming retirement of Mr. T. Smith, Stationmaster at Euston, L.M.S.R., is now announced and, as a result, the staff changes recorded in our issue of March 5 will take effect in the near future. For ready reference it may be recalled that Mr. J. Harrison, Stationmaster, Birmingham, succeeds Mr. Smith; Mr. Hewitt, Stationmaster,

Mr. J. Harrison, who, as announced in our issue of March 5, has been appointed Stationmaster, Euston, L.M.S.R., entered the service of the Furness Railway as a porter-clerk at Ravenglass at the age of 13. After serving at several other Furness stations, he was appointed Stationmaster's Clerk at Barrow, which position he left to join the Army in 1914. During the war, Mr. Harrison served in

1904-11, he was transferred to Sheffield as a relief clerk in the latter year, and was later appointed Relief Stationmaster at Chesterfield. In 1923 Mr. Hewitt's services were placed at the disposal of the Superintendent for Organisation & Staff, L.M.S.R., and he was appointed Staff Inspector; three years later he was transferred to the Freight Services Control Section of the Chief General Superintendent's staff.



Mr. T. Smith,

Stationmaster, Euston, L.M.S.R.,
1930-37



Mr. J. Harrison,

Appointed Stationmaster, Euston,
L.M.S.R.



Mr. F. G. Hewitt,

Appointed Stationmaster, Birmingham,
L.M.S.R.

Sheffield, takes the place of Mr. Harrison; and Mr. O'Connor of Northampton goes to Sheffield in place of Mr. Hewitt.

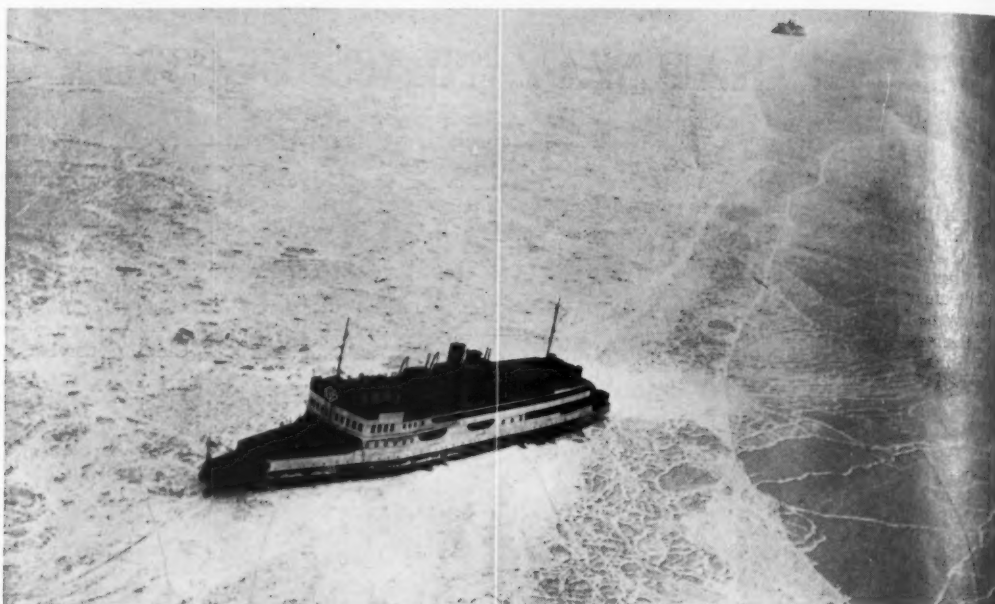
Mr. T. Smith, who is retiring shortly from the position of Stationmaster, Euston, L.M.S.R. joined the former L.N.W.R. in 1888 as a junior clerk at Ordsal Lane, and then occupied various other positions in the Traffic Department in the Manchester District until, in 1910, he was transferred to the Rolling Stock Department at Huddersfield. In 1912, however, Mr. Smith was appointed to the office of the Superintendent of the Line at Euston, but returned to the District Superintendent's Office at Manchester a year later, remaining there until 1917. In that year he again joined the office of the Superintendent of the Line, and was employed there until the grouping, when he returned once more to Manchester, only to be transferred to Derby in the following year, in each case as a member of the Chief General Superintendent's staff. It was in 1930 that Mr. Smith was appointed Stationmaster at Euston, the position from which he now retires.

France, the Dardanelles, Egypt, and Salonika, returning in 1919 to take up the post of Assistant Stationmaster at Barrow. After promotion to Senior Relief Stationmaster, Furness and West Cumberland Section, L.M.S.R., he was appointed Stationmaster at Carnforth in 1925, and Stationmaster at Southport (Chapel Street) in December, 1931. His two years at Southport were followed by appointment as Stationmaster, Birmingham (New Street), in January, 1933, the position he now vacates. Mr. Harrison was a pioneer of the Railwaymen's Mutual Improvement Classes, and is an Associate Member of the Institute of Transport.

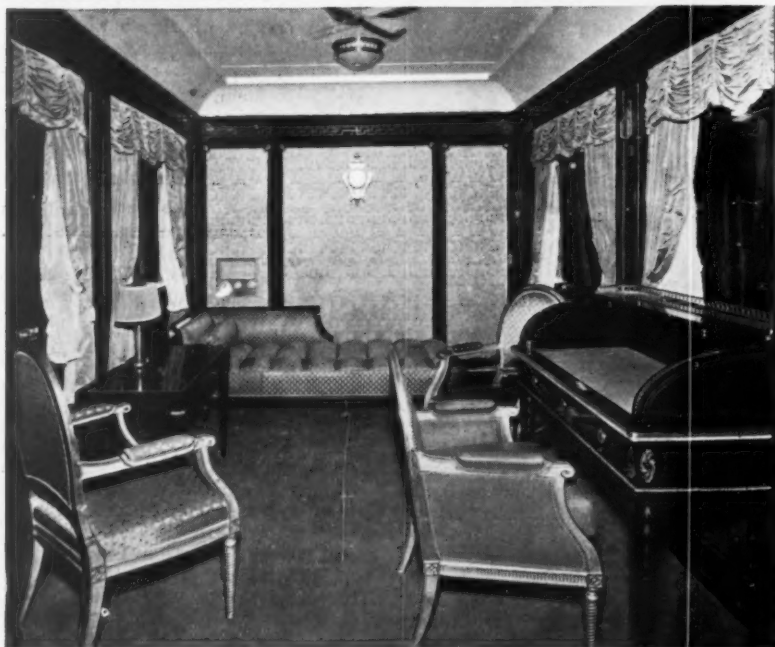
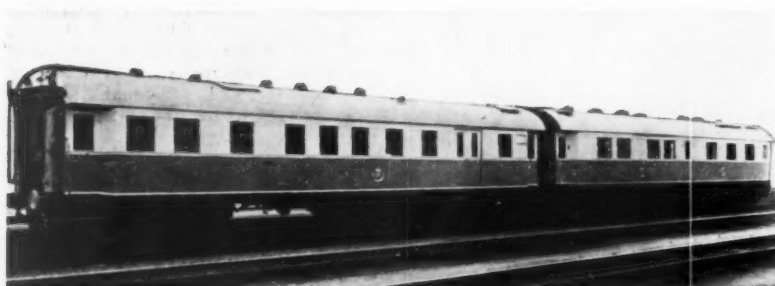
Mr. F. G. Hewitt, who, as announced in THE RAILWAY GAZETTE of March 5, has been appointed Stationmaster, Birmingham (New Street), L.M.S.R., joined the former Midland Railway at Broughton Astley in 1900 as a junior, and was transferred to Castle Donnington a year later as a clerk. After further experience at Derby booking office; at Walsall, as a booking and telegraph clerk; and at Doe Hill, as a clerk, extending over the period

In 1929 he took his place in the Freight Control service of the newly-created Divisional Superintendent of Operation at Derby, where he remained until September, 1933. Mr. Hewitt was then promoted to be Stationmaster at Sheffield, the position he now vacates to go to Birmingham in a similar capacity.

We regret to record the death in Buenos Aires, on January 21, of Mr. Frederick Cecil Bown, Locomotive Running Superintendent, Buenos Ayres & Pacific Railway. He was born in 1893, received his training as a mechanical engineer with the Somerset & Dorset Railway, between 1909 and 1911, and on the Midland Railway, England, from 1911 to 1914. On the outbreak of war he enlisted in the 17th Lancers, and later was given a commission in the Northumberland Fusiliers. In 1916, after being wounded, he was appointed a Section Director in the Gauge Department of the Ministry of Munitions (Production Branch). In 1919 Mr. Bown joined the Cordoba Central Railway, and in April, 1922, was appointed Locomotive Running Superintendent. He vacated this post



Ice conditions in Denmark recently when the Danish train ferries were marooned



Two special saloon carriages have just been completed for the Shah of Iran (Persia) by the Linke-Hofmann works at Breslau. The upper of the two views alongside shows the exterior of the vehicles, which bear the Imperial emblems; and the lower picture gives a good impression of the furnishing of the saloon

on June 1, 1928, to take up a similar one with the B.A. & Pacific Railway, which he occupied until his death. Mr. Bown took an active part in the work of the South American Centre of the Institution of Locomotive Engineers, of which he was elected a Member in 1921; from 1927 to 1930 he was a Member of the Council, and Vice-Chairman from 1931 to 1934. He was also a Member of the Institute of Transport.

L.M.S.R. APPOINTMENTS

The following appointments have been approved by the directors:—

Scottish Changes

Mr. J. N. Philipps, Assistant Operating Manager, Scotland (Glasgow), to be Operating Manager, Scotland (Glasgow).

Mr. A. C. F. Calladine, District Goods and Passenger Manager, Edinburgh, to be Assistant Operating Manager, Scotland (Glasgow).

Mr. J. Smith, Assistant to Commercial Manager (Passenger), Scotland (Glasgow), to be District Goods and Passenger Manager, Edinburgh.

Mr. R. D. Kerr, Rates and Fares Assistant (Passenger), Commercial Manager's Office, Scotland (Glasgow), to be Assistant to Commercial Manager (Passenger) (Glasgow).

Mr. J. Gold, Claims Clerk, Commercial Manager's Office, Scotland (Glasgow), to be Rates and Fares Assistant, Commercial Manager's Office (Glasgow).

Chief Commercial and Chief Operating Managers' Departments

Mr. J. H. Taylor, Agent, Covent Garden, to be Agent, Billingsgate.

Chief Commercial Manager's Department

Mr. W. W. Edmondson, senior clerk (excursion and ticket section), District Passenger Manager's Office, Manchester, to be Assistant (Sales), Chief Commercial Manager's Office, Euston.

Mr. G. Seddon, Road Transport Assistant to District Passenger Manager, Manchester, to be Assistant to District Passenger Manager, Manchester.

G.W.R. APPOINTMENTS

Mr. J. S. Nicholas is retiring this month from the position of Steelwork Assistant to the Chief Engineer, and is being succeeded by Mr. G. R. G. Sargent, Principal Draughtsman to the Steelwork Assistant.

Mr. C. H. T. Morgan, Chief Assistant to the Divisional Docks Engineer at the Eastern Ports, has been appointed Assistant to the Chief Engineer at Paddington.

Sir John Aspinall, sometime General Manager of the former Lancashire & Yorkshire Railway, whose death we recorded in our issue of January 22, left estate valued at £121,783 (£115,837 net).

Sir Robert McLean, former Agent, G.I.P.R., has been appointed Managing Director of Vickers Aviation Limited and of the Supermarine Aviation Works (Vickers) Limited.

INSTITUTE OF TRANSPORT

The following members and associate members have been elected during February:—

Members

Mr. H. H. Hudson, D.S.O., M.C., Traffic Manager and Deputy Chairman, Calcutta Port Trust.

Mr. W. H. Prendergast, Deputy Agent, Assam-Bengal Railway.

Associate Member

Mr. A. McK. Baird, Resident Engineer, Southern Railway.

Lt.-Col. Sir Cecil Paget, Bt., D.S.O., late General Superintendent of the former Midland Railway, whose death we announced in our issue of December 18 last, left estate valued at £207,935 (£195,998 net).

Miss Annie Lucy Watson, a permanent Director of Sutton & Co. Ltd., carriers, who died on December 29, left estate valued at £1,004,366 (£926,374 net).

TRANSPORT AND THE NEW L.C.C.

Mr. John Cliff, a Member of the London Passenger Transport Board, has been elected an Alderman of the county.

Mr. F. B. Galer, who has been elected as Deputy Chairman of the L.C.C., represents that body on the Port of London Authority and on the London and Home Counties Traffic Advisory Committee.

INDIAN RAILWAY STAFF CHANGES

Mr. B. Moody, V.D., has been confirmed as Secretary of the Railway Board.

Mr. J. C. Gibson, Officiating Deputy Agent, Organisation, E.I.R., has been granted 9 months' leave as from March 1.

Mr. N. D. Calder, Traffic Manager, E.B.R., has been permitted to retire from Government service as from January 13, and Mr. L. W. Van Someren has been confirmed in that post in his stead. Mr. H. W. Meakins has been confirmed as Deputy Traffic Manager also from the same date.

Mr. J. Mackinnon, Deputy Agent, N.W.R., has been appointed to officiate as Director of Civil Engineering, Railway Board, as from January 30.

Mr. C. E. Hall has been appointed to officiate as Deputy Chief Accounts Officer, G.I.P.R., as from January 13.

Mr. E. R. Casement, Divisional Superintendent, E.I.R., has been granted seven months' leave as from March 24.

Mr. P. H. Yeld, Deputy Traffic Manager, E.B.R., has been granted 28 months' leave preparatory to retirement as from March 26.

Mr. H. W. Huggins, Officiating Deputy Chief Mechanical Engineer (M.), N.W.R., has been granted 8½ months' leave as from February 26.

We regret to record the death, on March 9, at Northwood, of Mr. Ernest Alfred Glanville, M.B.E., M.Inst.C.E., F.R.G.S., late Deputy Chief Engineer, South Indian Railway. Mr. Glanville was one of the best known construction engineers of his time in India, and was even more widely known in Mesopotamia. An Officer of the Indian Army Reserve, he was early in the field in that campaign and rapidly rose to the rank of Major, attached R.E., attached Railways, and was in command of the Euphrates valley survey and construction work. He was mentioned in despatches and awarded the M.B.E. for his services. The funeral was on Thursday at 3 p.m., at Golders Green Crematorium, and at it the directors of the South Indian Railway Company were represented by Mr. C. A. Worsfold.

UNITED KINGDOM RAILWAY OFFICERS' AND SERVANTS' ASSOCIATION

We regret to record the recent death of Mr. Alfred James, Secretary of the association, after a short illness. He was for over 46 years in the employ of the association, and for the last 38 years its Secretary. His death is a great blow to the association, and he will be greatly missed at the anniversary festivals, where he was a familiar figure for so many years past.

Mr. Albert T. Reynolds, the Principal Clerk to the association, who was appointed Acting Secretary in December at the commencement of the Secretary's illness, was appointed Secretary of the association, on March 1. Prior to joining the association, Mr. Reynolds had been connected with the insurance world, and he would appear to be well suited for his present position.

Sir John Cadman, G.C.M.G., Chairman of the Anglo-Iranian Oil Co. Ltd., and a Director of the Great Western Railway Company, has consented to preside at the seventy-sixth anniversary festival dinner of the association, which will be held next October, at a date to be announced later.

RAIL LINKS IN EMPIRE AIRWAYS.—

With reference to a paragraph bearing this title which appeared on page 456 of last week's issue of THE RAILWAY GAZETTE, all the outward and inward Empire air services of Imperial Airways were scheduled to operate to and from the temporary marine base at Southampton as from March 5. The link between London and Southampton is provided by the Southern Railway, a special Pullman car from Waterloo being run through to Southampton docks, whence passengers are taken to the flying-boats by high-speed motor-boats. This arrangement also cuts out the Paris-Marseilles rail link for air passengers on Empire routes.

LONDON & NORTH EASTERN RAILWAY COMPANY

Increased receipts—Reduction in valuations for rating—Renewals—Financial position compared with 1930—The wages problem—Road competition—Amendment of Road and Rail Act, 1933—Improvements in operation

The fourteenth annual general meeting of the London & North Eastern Railway Company was held in the Wharnccliffe Rooms, Hotel Great Central, Marylebone, N.W.1, on Friday, March 5, Mr. William Whitelaw (Chairman of the company) presiding.

The Secretary (Mr. James McLaren) read the notice convening the meeting.

The Chairman: My lords, ladies and gentlemen, before I deliver my speech, I wish to offer a very hearty welcome to our Chief General Manager on his return from India, where we permitted him recently to go at the urgent request of His Majesty's Government, to conduct very important investigations into the Indian Railway system. We are very glad to be able to welcome him back on behalf of our company.

The review of the company's business for last year having been circulated with the summary of accounts to all stockholders, I shall once more be able to confine my speech to a few points of special interest or importance.

Capital Expenditure

The net capital expenditure for the year amounted to only £182,460, largely due to credits for sales of land and property and the disposal of one of our older steamships. Our capital expenditure on works under the Development Act, 1929, amounted to only £701, these works having been practically completed. We also spent £9,491 of capital on schemes undertaken as a result of the remission of the passenger duty. Our estimate of capital expenditure for the current year is £4,901,000. Of that total £1,663,000 will be spent on works scheduled to the Railways (Agreement) Act, 1935, and the London Passenger Transport (Agreement) Act, 1935, and £2,546,000 on additions and improvements to rolling stock, leaving £692,000 as the estimate of expenditure of the normal type.

Passenger Train Receipts

The development of our passenger traffic has continued in a gratifying manner, about five and a half million more passenger journeys, exclusive of season tickets, having been added to the previous year's increase of eight millions, and our receipts have increased by £482,000. Receipts from first-class fares showed an increase of £69,395, from second-class £9,979, from third-class £367,000 and from workmen's fares £36,246. Receipts from parcels and miscellaneous traffic increased by £27,000. The number of parcels was 3.3 per cent. greater, but as a result of the lower rates in operation, the revenue was £65,500 less or 3 per cent. On the other hand, there was an improvement in miscellaneous traffic, the carryings of fish being particularly satisfactory. The income from mails and parcels post showed an increase of £33,000.

Freight Carryings

There has been a welcome, though moderate, improvement in our freight carryings. From merchandise (excluding Classes 1 to 6) and livestock traffic we have obtained an increase of about £551,000, while our receipts from minerals and merchandise in Classes 1 to 6 were £174,000 higher. These increases would have been considerably larger but for the poor agricultural results of the year. The originating tonnage of sugar beet fell by 370,000 tons or 30 per cent., and our potato traffic was 55,000 tons lower (or 9 per cent.), these decreases being due partly to poor crops and partly to road competition. On the other hand, iron and steel originating traffic of all kinds increased by 1,851,000 tons or 17 per cent., and timber traffic by 142,000 tons or 7 per cent. An increase of £488,000 in receipts from coal and coke was

entirely due to landsale business. The originating tonnage of landsale coal increased by 3,237,000 tons or 8½ per cent, while the originating tonnage of shipment coal decreased by 511,000 tons or 1½ per cent. The continued decline in the tonnage of coal carried for shipment affects both our rail and dock revenue to a serious extent.

Road Competition

Road competition for the lighter merchandise, fish and livestock traffic continues to grow in intensity. We have taken measures to meet it by a large extension of the areas of our collection and delivery services, by the increase of our fleet of motor vehicles and of the number and mobility of our canvassing staff. The demand for door-to-door transport is insistent for many commodities, and we must either leave such traffic to the road haulier or make suitable provision for rail carriage and cartage in our own lorries. We continue to compete with the road haulage of freight traffic under the very serious handicap of being compelled to carry all traffic offered to us at rates which are published, and under conditions which prohibit us from any discrimination as between one trader and another. I do not propose to examine this matter at length today as the case for the railways has been admirably set forth by Sir Josiah Stamp in his recent speech to the stockholders of the London, Midland & Scottish Company, which I commend to your attention.

The "Green Arrow" service for the registered transit of merchandise by goods train and the "Cash on Delivery" service continue to grow in popularity. The number of consignments originating on the London & North Eastern system showed increases of 20 per cent. and 9 per cent. respectively as compared with 1935. The "Blue Arrow" service for registered transit by passenger train has made a promising start. The "Save to Travel" scheme introduced by this company on January 1, 1936, has met with considerable success. This company also participates in schemes operated in conjunction with the Yorkshire Penny Bank and other savings banks. The total business done through these schemes shows a steady increase.

Containers

The company's stock of containers was increased by 740 during the year to a total of 2,921. Apart from an increase of 304 covered containers the main addition was 400 insulated containers for the conveyance of meat. The provision of this special type of container has been necessary in order to cater adequately for a heavy and valuable traffic in home-killed and imported meat. The increasing popularity of this method of conveyance is illustrated by the fact that the loadings of this company's containers were 27 per cent. higher than in 1935.

Wage Deductions in 1931

In March, 1931, the standard rates of pay and conditions of labour were in operation. Railway receipts had fallen during 1930. The National Wages Board had before it the completed accounts for 1930, showing a decline in net revenue from £44.9 millions in 1929 to £37.7 millions in 1930. Having the financial results of 1930 before it, the National Wages Board fixed the level of wages and conditions of labour, and the railway companies and railway unions accepted that decision, which is known as Decision No. 119. Net revenue declined after 1930, until it reached the low level of £26,425,000 in 1932. Then an improvement began and net revenue gradually increased, until it stood at £35,731,000 last year. That figure is still £1,985,000 below the net revenue for 1930, and, as already stated, on the results of that year wages and conditions were modified by

the Wages Board in Decision No. 119, which was accepted by all parties. In September, 1932, the companies asked for a further modification of wages, which being declined by the unions was submitted in the following November to the National Wages Board. No agreement could be arrived at by the board and the decision on the application was that of the Chairman alone. The railway unions declined to accept his decision, and the reference of wages questions to the board was shortly afterwards brought to an end.

Partial Discontinuance of Wage Deductions

In October, 1934, the railway companies and the railway unions agreed to partial discontinuance of the deductions from wages as fixed in 1931; your directors opposed the making of this agreement, but had to accept the decision of a majority of the companies. In 1935 the railway unions made another application for further discontinuance of the 1931 deductions and variations of conditions, and the claim was referred to the newly constituted Railway Staff National Tribunal, which in July, 1936, issued its decision thereon; by this decision a part of the claim as submitted was granted. Recently a further claim was put forward by one of the railway unions which, if granted, would have cost the companies about £10,000,000 a year; it has been rejected by the tribunal.

Wages Position Today

The position today is that wages and conditions of labour have been improved since March, 1931, to an extent which has cost the companies nearly £2,500,000 a year, while their financial position is at the end of 1936 still worse by nearly £2,000,000 than it was at December 31, 1930, on the accounts of which year Decision No. 119 was based. In the view of your directors, no further improvement in salaries and wages of the conciliation grades or in the conditions of labour is warranted until the financial position of 1930 has been secured to the stockholders. (Hear, hear, and applause.)

Rating Assessments

The judicial decisions of the House of Lords as to the interpretation of the Railways (Valuation for Rating) Act, 1930, to which reference was made last year, resulted in negotiations between the local authorities and the four main line railway companies which culminated in an arrangement as to the amount at which the annual value for rating purposes of those parts of the undertakings of the four main line railway companies which are situated in England and Wales should be fixed. Under that arrangement the amount of this company's valuation for each of the years 1931/1941 was agreed at a compromise figure of £1,100,000, which compares with a previous valuation of roughly double that amount. As is well known, amounts representing three-quarters of the rates levied on those properties of the company which are occupied for transport purposes are, under the Local Government Act, 1929, paid partly into the Railway Freight Rebates Fund and partly into the Dock and Canal Rebates Fund, and are distributed by way of rebates from the carriage charges on selected traffics or from the dock or canal charges, as the case may be. The fixing of the reduced assessment resulted not only in a reduction of the amounts payable by the company into the funds above mentioned and of the amounts payable in respect of rates to local authorities but also, since the new assessment dates from 1931, in considerable sums being due to the company both from the rebates fund and from the local authorities in respect of overpayments since 1931.

Allocation to Renewal Funds

While some time will elapse before the amounts of the overpayments thus recoverable by the company can be accurately ascertained, the approximate sum due in respect of the period to December 31, 1936, is £4,095,000. Of this sum £3,340,000 attributable to the period to December 31, 1935, has been credited to the Rolling Stock Renewal Fund. While the balance of £755,000 attributable to the year 1936 has been carried to revenue, the charge to revenue for the year 1936 in respect of both local rates and payments into the Railway Freight and Dock and Canal Rebates Funds being based upon the reduced assessment. Of the approxi-

mate sum of £4,095,000 recoverable by the company about three-quarters is due from the Railway Freight Rebates Fund and about one-quarter from local authorities. To enable the Railway Clearing House to provide the sums repayable to the companies out of the Railway Freight Rebates Fund an Act passed at the end of 1936 empowered the Railway Clearing House to borrow on the security of the fund, and by this means an amount of £2,779,000 has already been paid to this company on account of this debt, leaving the balance to be paid when the actual amount due has been finally ascertained. A settlement with the local authorities will be effected later when the actual amounts due from them have been ascertained.

Prospects

In speaking of our immediate prospects, we are entitled to anticipate some improvement during the year in our traffic of all kinds, especially in the carriage of coal; on the other hand, we cannot ignore the certainty that our locomotive coal will cost us more as our older contracts expire, and that the higher rates of wages which ruled for only 4½ months last year will be payable for the full twelve months of the current year. There is also the certainty that the prices of iron, steel, copper and all electrical equipment will show large increases over those ruling during 1936; it is possible that increased costs will be so considerable as to require us to modify or even abandon some of the works which we have in contemplation in connection with the Railways (Agreement) Act, 1935.

Operating Improvements

The average freight train load over our line rose from 130½ tons in 1935 to 133½ tons last year, due mainly to the general increase in freight traffic; that increase along with the heavier passenger traffic brought about a more intense occupation of the line, which resulted in a small decrease in the average train miles per train hour for freight trains from 9.34 in 1935 to 9.08 in 1936; the average train miles per train hour for passenger traffic showed a slight improvement at 14.37, this figure has shown a consistent increase over a number of years, reflecting the numerous improvements made in the services from time to time. The figure of ton miles per total engine hour for 1936 was 511½ compared with 506½ for 1935. This statistic is an important index of operating efficiency, and it is interesting to record that for this company it has shown a steady improvement since 1932, when the figure was 483. The ratio of railway working expenditure to gross receipts has been 81.38 as compared with 82.30 in the previous year.

Miscellaneous Receipts and the Dividends

Joint lines have yielded £31,900 more on the top of a previous increase of £25,900. Interest and dividends in other undertakings are £33,917 higher, and Treasury grants under the Development Act, 1929, amounted to £87,517, or £11,213 below the amount for 1935; these grants will gradually decrease as the works come into operation and commence to earn their own revenue. The balance available enables us to recommend the payment of the dividends on the first preference stock and the redeemable preference stock at the full rates, and a dividend of ten shillings per cent. on the 2nd preference stock.

I now move that the report of the directors, with relative statement of accounts for the year ended December 31, 1936, be received and adopted.

SIR MURROUGH JOHN WILSON (Deputy-Chairman): I beg to second that.

Stockholders' Remarks

Councillor J. Wilson congratulated the Chairman upon his excellent address. The cash on delivery system, he was very pleased to know, had been a success, but he wished to advocate, for the fifth year in succession, a penny a mile single fare. He knew of cases where people were sending their luggage in advance and travelling on a bus at a penny a mile. As a manufacturer he knew that the road hauliers called at his works and offered to take certain goods, but would not take those that were what they called "railway traffic." What they meant by "railway traffic" was that

they could not buy water for their radiators at the rates fixed by the Rates Tribunal. That tribunal had been inaugurated when the railways were a monopoly, and had fixed what was considered to be a reasonable dividend to the stockholders. Today it was fixing the rates but did not consider the dividend.

Mr. J. Miller said he had been informed that the sack department was lending out sacks at something like a penny a month each, and the farmers were getting those sacks, filling them with their grain and sending them by road haulage. When he received the statement that the company had got £4,095,000 for rating overpayments he was inclined to think that that was a deferred dividend, and expected a distribution on the junior stocks. But he agreed with the Chairman's explanation that £3,340,000 was to be allocated to Rolling Stock Renewal Fund and £755,000 carried to revenue. It was right that the equipment should be brought up to the best possible standard. He expressed disappointment with the results of the legislation which followed the Salter Conference on road and rail transport. The road haulier had no restriction on his rates, whereas the railway companies must publish their rates, and the road haulier got those rates and undercut them. The only hope was that where the road hauliers undercut one another the railways might get an opportunity. As to the suggestion that the road haulier should be allowed to go unrestricted, on the ground that it would be to the advantage of the country in war time, he would point out the danger of using for road transport the fuel which would all have to be imported, and would be urgently required for our air arm. The directors were to be congratulated on having developed the coal-burning engine to such a high standard. There was the coal in the country, and it could be got at any time, and the railways could always keep transport going. A train could take a load, say, of 35 trucks, each truck with a load equal to that on a lorry. A train would require two engines and a guard, but to carry the same load by road would require 35 men. Referring to the claim by the A.S.L.E.F., for a six-hour day, Mr. Miller pointed out that not a single one of the co-operative societies had granted that privilege to its own employees. He thought that the railwaymen should be more considerate, and if they were so, the companies could certainly meet them. But the men must get it out of their minds that the railway was there for their exclusive use and for their exclusive advantage.

Mr. E. H. Greg wanted to know whether it were possible to give in the accounts of the group any indication of the contribution by its constituent members to profit and loss. The £300,000, or 24 per cent., loss on collected and delivered traffic seemed to him enormous. The hotels showed a profit of 9 per cent. and road transport a profit of 19 per cent.

Mr. Sutcliffe asked if in case a miller were 20 miles away from a farm, and there was no possibility, after wheat being bought from that farm, of its being moved by railway, the company would move that wheat by road if the miller wished. There had been a great change with regard to the conditions of sale of agricultural produce. Formerly the quotations for grain were free-on-rail. Now they seemed to be all at the farm. In the leisurely days of the past he used to suggest to business friends that what was really required to get the English wheat moving in big volume was that the railway company should put up a silo capable of taking in from the various farms 30, 50, 80, or 100 quarters, and then, to avoid the variation and the bothering with small lots, be able to deal with them and condition them. Then a miller would perhaps be able to take them in large quantities in bulk. He also wished to know whether there was any need for this company and the London Midland & Scottish Railway to duplicate their Sunday excursions to Midland towns.

Miss B. B. Rodgers suggested an improvement in the train service to and from Maldon.

Mr. E. S. Dixon referred to the savings bank and asked how the interest on the funds in that bank was paid.

Chairman's Reply

The Chairman: Regarding the remark by Councillor Wilson about luggage in advance, no one can send his luggage in

advance without the production of a ticket, and if some one has succeeded in sending that luggage without the ticket, he has defrauded the company concerned. If we can discover who has done this at any time, we shall not hesitate to take the necessary action. To both Mr. Wilson and Mr. Miller I express our thanks for admirable speeches. They have said many things about road competition with which I am in whole-hearted agreement. The general managers are constantly considering this question, and they have to take the right time to try and get an improvement of the law. We did not get all we hoped for out of the law which followed the report of the Salter Conference, but we got a good deal and we must try to get the rest as quickly as we can. Getting a sack for a penny a month, and then using it to send traffic by road haulier is an old trick. There again we must try to watch as best we can.

I am afraid I cannot give Mr. Greg any satisfaction about the value of constituent companies. That would involve a division of the receipts by the Clearing House between one area and another, and although it would be very interesting, it would cost a great deal more than it would really be worth. I do not think it would be helpful to the shareholders and the company. We know how traffic has been developed in different districts and each area has its own Divisional General Manager and staff of officers, and all that has been very carefully looked after. The great thing is to look after the traffic and the business, each within its own area.

As regards collection and delivery, that figure is not worth troubling about. It really is an arbitrary figure. It could be made quite different if we took a little more off the rate for railway carriage and put it on to the cartage traffic.

In reply to Mr. Sutcliffe I would say that we have extended our cartage services. We would very likely cart wheat to a mill for a distance of 12 or 20 miles if we thought the traffic worth having—but probably not for a distance like 100 miles. We have the power to give the service if our officers think the traffic is worth having. I do not think there is anything in the suggestion about competitive traffic between the London Midland & Scottish and the London & North Eastern on Sundays. These excursion trains are running through different districts, and so long as they are well filled it is all right.

I will ask the Chief General Manager to look into that question of the Maldon train service. It is a difficult service to run, but we will look and see if anything can be done. We are paying 4 per cent. on the savings bank and the money is used in our business.

The resolution for the adoption of the report and accounts was put to the meeting and carried unanimously.

The Chairman then moved and Sir Murrrough J. Wilson seconded: "That dividends be now declared in terms of Account No. 9 headed 'Proposed Appropriation of Net Revenue'; that the dividends be payable (under deduction of income tax), less: (1) the amounts paid as interim dividends appearing in Account No. 9 (a) headed 'Statement of Interim Dividends Paid'; and (2) the balance paid on February 15 last of the dividends on the first and second guaranteed stocks—by warrants on March 1 to the proprietors registered in the books of the company at the close of business on January 28, 1936, and that warrants be sent by post on March 10."

On being put to the meeting the motion was carried unanimously.

The following were then unanimously re-elected Directors of the company:—Mr. William Whitelaw, Sir Charles A. Batho, Bart., The Hon. Eric B. Butler-Henderson, Mr. Walter B. Gair, Sir William Gray, Bart., Sir Ronald W. Matthews, and Mr. Andrew K. McCosh.

The Chairman: Consequent on the death of the Marquess of Lansdowne and Mr. Robert Hugh Tennant, vacancies exist on the Audit Committee. I would like to say how how much we regret the loss of these two gentlemen. Mr. Tennant at one time had been a Director of the North British Railway and Chairman of the Westminster Bank, and the Marquess of Lansdowne had been a Director of the Great Central Railway Company. They gave their services very willingly to the shareholders, and Mr. Tennant never missed a meeting. The whole duties of the Audit Committee

are to consider as to the recommendation of the re-election or otherwise of the retiring auditor, and, in the case of a vacancy, to recommend a new auditor for election; there are no fees.

On the motion of the Chairman, seconded by Sir Murrough J. Wilson, Lt.-Col. Edwin Percival Brassey, D.S.O., and Sir Raymond Whybrow Woods, C.B.E., were unanimously appointed members of the Audit Committee in place of the Marquess of Lansdowne, D.S.O., and Mr. Robert Hugh Tennant, deceased.

On the motion of Sir Charles G. Macandrew, seconded by Mr. Sutcliffe, Sir Albert W. Wyon, K.B.E., F.C.A., was re-elected an auditor of the company.

The Chairman: In connection with the scheme for relief of the distressed areas a request was made to the company to sell their Tyne Dock to the Tyne Improvement Commissioners. The price offered is adequate, and the terms of agreement in respect of the traffic arrangements are satisfactory. The directors, however, were advised that Parliamentary powers for the sale of the dock were necessary, and the fact that the company had a Bill before Parliament when the sale was effected provided an opportunity of obtaining them. Application was made to Parliament for leave to introduce out of the ordinary course the necessary powers into their pending Bill, and this was permitted subject to the proprietors approving the agreement. My motion now is: "That the sale of the Tyne Dock to the Tyne Improvement Commission be agreed to; and that the draft agreement now submitted (subject to any alterations therein which the directors may find necessary or desirable) be approved."

Sir Murrough J. Wilson seconded, and the resolution was carried unanimously.

SPECIAL GENERAL (WHARNCLIFFE) MEETING

The Secretary (Mr. James McLaren) read the notice convening the meeting.

The Chairman: The London & North Eastern Railway Bill: It is necessary to promote this Bill to obtain further statutory powers in connection with the schemes of electrification for the London Passenger Transport area, in the financing of which the Government are assisting. The powers so required are for the construction of short lengths of railway and railway widenings; for the compulsory acquisition of lands and other matters of minor importance.

Opportunity is being taken of the promotion of the present Bill to confirm the lease to the Trent Navigation Company of a part of the Nottingham Canal and to release the company from statutory obligations to cater for navigation on the remainder of that canal, upon which the traffic for many years was negligible and has now, for some considerable time, ceased altogether.

An agreement has been concluded with the Harwich Corporation for the taking over by the corporation of certain obligations of the company with respect to a part of the quay at Harwich. Both these agreements should result in substantial economies.

On the motion of the Chairman, seconded by Sir Murrough J. Wilson, the London & North Eastern Railway Bill was unanimously approved.

The Chairman: The Great Western Railway Bill: Consent is also required upon purely technical grounds to the promotion of this Bill because it confers powers upon the company to make agreements with the Great Western Railway Company in connection with the construction, ownership, and working of a railway the Great Western are constructing in connection with the Great Western and Great Central Joint Railway at Denham.

On the motion of the Chairman, seconded by Sir Murrough J. Wilson, the Great Western Railway Bill was unanimously approved.

Mr. H. D. Leather proposed a vote of thanks to the Chairman and directors and all the members of the staff for their services. He thanked the Chairman for having had the courage frankly to speak out as to the position with regard to the companies and the wages question. In this company there was a capital of £140,000,000, on which, on

the average of the last six years, only £55,000 per annum had been distributed.

Mr. Dolden seconded and the vote was carried unanimously. The proceedings then terminated.

THE L.N.E.R. IN 1936

The following is the Chairman's review of the L.N.E.R. Company's business during 1936:—

The revenue earned by the company during the year has shown moderate increases under practically every head with the exception of coal for export, but large increases in expenditure, mainly in the renewal of rolling stock, have prevented the realisation of such increase in net revenue as can be described as satisfactory. During the year there was a pronounced upward movement in industrial activity, resulting in the output of certain industries reaching post-war records. The expansion was, however, mainly confined to the home market, export trade showing but a small improvement. Receipts from all classes of traffic were appreciably higher than in 1935, but a marked improvement is still necessary before the level of 1929 is reached. The following table of railway traffic receipts illustrates the position:—

	Passenger	All Merchandise and live stock	Coal	Total
1929	£ 19,097,000	£ 21,853,000	£ 14,132,000	£ 55,082,000
1935	16,466,000	16,501,000	11,817,000	44,784,000
1936	16,970,000	17,226,000	12,305,000	46,501,000
Increase 1936 compared with 1935	+ 504,000	+ 725,000	+ 488,000	+ 1,717,000
Decrease 1936 compared with 1929	- 2,127,000	- 4,627,000	- 1,827,000	- 8,581,000

The tonnage of freight traffic carried in 1936 was 6,263,565 tons, or 5.07 per cent. greater than in 1935, while the number of passenger journeys (excluding season tickets) increased by 5,495,998 or 2.73 per cent. The freight engine mileage increased by 3,652,436 or 4.24 per cent. and the passenger engine mileage by 1,727,449 or 2.20 per cent. The respective increases of freight tonnage and freight engine mileage are quite satisfactory in view of the insistent demand for the speedier delivery of all goods.

The Silver Jubilee, on its four-hour schedule between Newcastle and London, has maintained a high standard of punctuality. The popularity of the train is evidenced by the frequency with which the demand for accommodation exceeds the capacity. Our experience of streamlining our high-speed engines and our passenger carriages for the faster trains has amply confirmed what was stated in the review a year ago, and we are constructing trains similar to the Silver Jubilee for new high-speed services between London and Edinburgh commencing in the summer, and between London and Leeds and Bradford commencing next winter. The new train between London and Edinburgh, appropriately named the Coronation by permission of His Majesty the King, will commence running on July 5; it will leave London at 4.0 p.m. and, making a stop at York, arrive in Edinburgh at 10.0 p.m., thus reducing the time occupied at present on the journey by an hour and a quarter. This increase in speed will be secured mainly by running at a much higher speed on up gradients, and the weight of the train will be limited to about 250 tons. In the reverse direction the corresponding train will leave Edinburgh at 4.30 p.m.; it will make a stop at Newcastle, and reach London at 10.30 p.m. This timing will permit of making connections which will reduce the journey time from Aberdeen to London to 9½ hours, as compared with 11 hr. 5 min. at present. We anticipate that this train, running during the evening, will meet the convenience of many people who have not time to give up to a day journey and do not like travelling by night. The supplementary fare for the train will be 6s. first class and 4s. third class, as between London and Edinburgh, with modifications for the shorter journeys. With the commencement of the winter 1937 timetable a new fast service will be

introduced between London and the West Riding of Yorkshire, serving both Leeds and Bradford, and will cover the 186 miles between Leeds and King's Cross at an average speed of 67.6 miles per hour.

The Coronation Train

During 1936 numerous improvements were made to our train services, the most notable being the accelerations of the Flying Scotsman, The Queen of Scots, and the mid-day Scottish services which were brought into operation in July. Towards the end of the year delivery of the new streamlined Pacific locomotives commenced, the first to be put into traffic being named the *Golden Eagle*. It is intended to employ this class of engine in hauling the Coronation train and other exceptionally fast trains, as well as in replacement of some of the older engines on our other express trains. During recent years the directors have limited the building of new rolling stock to the minimum required for the conveyance of all kinds of freight traffic would be essential if the company were to be able to meet the demands of the travelling public and the traders on their system. In their desire for economy, the directors went as far as was possible in the restriction of wagon building; and they have now found it essential to enlarge the programme of new construction by placing orders for the building of additional open wagons for the conveyance of general merchandise traffic, and for hoppers coal wagons for the carriage of mineral traffic in the North Eastern Area where the company is under a statutory obligation to supply wagons.

Apart from expenditure under the Passenger Duty Scheme and the Railway Development Act (1929), the expenditure schemes authorised by the directors in former years and reported on during 1936 numbered 255; their cost amounted to £380,687. The savings in annual expenditure secured by their adoption total £99,099. The additional net revenue which accrued amounted to £31,882. Taking the actual savings and additional net revenue together, the figure is £130,981—equal to 34 per cent. on the cost. The programme of works to be carried out under the Railways (Agreement) Act, 1935, as announced in the report of 1935, has been started; the list of proposed works has been substantially modified in view of the considerable increase of costs since the original estimates were prepared; there has been an exceptionally large increase in the cost of all signalling work and electrical equipment. The difficulty of securing the delivery of iron and steel may be expected to delay the completion of a number of these works.

Road Transport Holdings

The total amount invested in the shares of associated omnibus companies, at the end of 1936, was £2,353,467. The dividends and other sums received during the year amounted to £232,201, representing a return at the rate of 9.87 per cent., as compared with a return of 8.76 per cent. in the previous year. A portion of the revenue related to capital which was held for part of the year only, and the total income is equivalent to an annual return of 10.01 per cent. In addition, the net savings accruing to the company from the closing of branch lines for passenger traffic, reduction of train services rendered possible by the employment of omnibus services, and other measures of co-ordination, amounted during the year to approximately £99,000. Investments in companies engaged in the transport of freight traffic by road amounted, at the end of 1936, to £630,548, the bulk of which represents the company's holdings in Carter Paterson & Co. Ltd. and Pickfords Limited. The income during the year amounted to £35,898, being a return on the investment at the rate of 5.69 per cent., compared with 5 per cent. in the previous year.

Great alterations have taken place in the methods by which the transport of many commodities is now carried on, as compared with only a year or two ago. This is especially true of agricultural traffic, which, until recently, was carted to and from our stations by the farmers. Now farmers

generally use their own motorcars to convey them to the markets which they attend, and they are rapidly giving up their own carting teams as they find road hauliers coming to their farms and offering to convey their produce by road. In the circumstances the company has found it necessary to extend largely its goods motor fleet and canvassing organisation, in order to meet this new form of competition. At December 31, 1936, the motor fleet numbered 3,249 (compared with 3,033 at the close of 1935), and the purchase of further vehicles had been sanctioned for which orders had been placed. The additional motors are required to deal not only with the increase which has taken place in the volume of rail traffic requiring cartage, but also to supplement the railway services by giving prompt facilities for collection and delivery. The purchase of additional trailers for working with the mechanical-horse units at King's Cross goods station has been necessary to maintain the increased speed of loading at that depot, made possible by improved goods shed accommodation. Motors have also been required for the further development of cartage services in rural areas, and the extension of the boundaries within which cartage is undertaken. Continued attention has been given to economy in carriage working, and wherever the substitution of new motors, either for horses or for motors of older and less suitable types, has made a saving in costs possible, schemes of this kind have been carried out. The horse-drawn vehicle remains, however, a more economical unit for certain purposes, and the number of horses employed on cartage work at the close of the year was 2,372, as compared with 5,113 in 1930. The question of road competition for freight business has continued to give rise to concern, particularly in regard to long-distance and heavy traffic. During the year opportunities have occurred to lodge objections to a number of applications for "A" licences granted to road hauliers under the Road and Rail Traffic Act, 1933, and in those cases where the interests of the railways are adversely affected steps have been taken, in conjunction with the other companies, to endeavour to obtain protection. The companies found it necessary to lodge appeals against various decisions of the Licensing Authorities, and certain important cases were at the close of the year awaiting the decision of the Appeal Tribunal.

The Iron and Steel Industry

The iron and steel industry experienced another year of great activity. The output of steel reached the record figure of 11,698,200 tons, an increase of 1,839,500 tons (18.7 per cent.) on 1935, and was more than double the production of 1931 or 1932. The production of pig iron at 7,685,700 tons was the highest since 1920, and showed an increase of 1,261,600 (19.6 per cent.) over the previous year. Demand has more than kept pace with the growing output, but difficulty in regard to pig iron and scrap supplies may prevent the full demand being met for some time ahead. The tonnage of merchant shipping under construction at the end of 1936 was the highest figure recorded since September, 1930, and was about 30 per cent. better than a year ago. The flow of new orders still continues, and as a number of yards are engaged on naval construction the shipbuilding industry appears to be in a healthier condition than for a number of years past. Nevertheless, any further substantial increase of orders may probably be checked by a shortage of skilled labour in the shipyards. In the coal industry, 1936 saw the inauguration on August 1 of schemes for central selling in all districts. It is not yet possible to express any final opinion as to the effect of this new organisation.

During the past year the directors were pressed to agree to an increase in the prices at which they previously arranged contracts for the supply of locomotive coal, in order to assist in the settlement of certain difficulties which had arisen in connection with the scales of wages in the coal trade. They declined to agree to such a proposal, but have been compelled to accept an increase in the cost of coal on new contracts. During the year the cost of coal due to this advance in prices increased by £78,500. The total output of coal for the year in Great Britain was 228,500,000 tons, an increase of 5,600,000 tons on 1935. This increase was entirely

due to the greater demand for industrial and domestic fuel. Total exports were roughly 5 million tons below the 1935 level, and the tonnage of shipment coal originating on this company's system fell by 511,657 tons and was 8,016,350 tons less than in 1929. The resumption of trade with Italy, and the relaxing of the restrictions on imports into France and Belgium, are expected to result in some improvement during 1937. The past year was a bad one for agricultural traffics. A substantial proportion of our merchandise traffic is connected with the agricultural industry, and the poor production has been severely felt by this company.

It is gratifying to be able to record a credit balance in our steamships account for the first time since 1931. An increase of £64,165 in receipts, coupled with a decrease of £1,027 in expenditure, converted the loss of £44,474 in 1935 into a profit of £20,718 in 1936. Our Harwich Continental services carried 13.7 per cent. more passengers than in 1935, and 6.3 per cent. more than in 1931, the improvement being most marked in the Hook of Holland service. Our programme of week-end cruises was again most successful. In order to provide adequate covered accommodation in wet weather, structural alterations, including an extension of the boat deck and the provision of a special lounge, were carried out on ss. *Vienna*. These improvements were much appreciated by cruise passengers and avoided any inconvenience during bad weather. The *Vienna* and *Amsterdam* will be reserved for a special cruise from Harwich to Spithead for the Coronation naval review. Cargo carryings were 183,634 tons, an increase of 17,963 tons, or 10.8 per cent., in spite of the restrictions on Continental trade and the Antwerp dock strike which lasted for three weeks in June.

Although traffic by the Harwich-Zeebrugge train ferry was seriously depleted through the cessation of trade with Italy during the early part of the year, a welcome improvement during the last few months resulted in the total tonnage for the year being slightly higher than in 1935. The new train-ferry service inaugurated by the Southern Railway Company in October between Dover and Dunkerque will be in com-

petition with our Harwich-Zeebrugge service, but, as a result of negotiations, a satisfactory agreement has been reached with the Southern Railway by which the competition will be confined in extent and joint efforts will be made to develop traffic by both routes. As stated in last year's review, our Grimsby services are now operated under the management of Associated Humber Lines. The volume of cargo (other than coal) between the Humber and the Continent has recently shown a slight improvement over the low level of the last few years, and we have benefited from this as well as from the substantial economies made possible by the unified management of the Humber services. The imports and exports other than coal through our docks were generally at a higher level than in 1935, the imports of timber and iron ore being particularly satisfactory. The landings of fish also improved, notably at Hull. The total receipts from docks, harbours, and wharves increased by £79,465 to £2,735,031; expenditure rose by £10,635, and, after allowing for the reduction of rates and rate relief on the basis of the new valuation, the net receipts were £68,830 better at £183,646.

The popularity of the camping coaches continues to grow, and it is proposed to provide 10 coaches in addition to the 106 which were in use during 1936. During Coronation week 52 camping coaches will be placed at suitable sites in the London suburban area, and let at a rent of £10 which will include daily travel to and from our London termini for the occupants. During recent years, a large amount of money has been expended in the modernisation of our hotels without which their efficient administration could not have been carried on, and most of this expenditure has been charged to revenue or revenue reserve funds. This special expenditure will be completed when we have carried out improvements on our hotels at West Hartlepool and Saltburn. The expenditure thus incurred has proved remunerative, and the profits of our Hotels Department during the year have shown a satisfactory improvement, the net revenue having increased by nearly £40,000.

Birmingham Railway Carriage & Wagon Co. Ltd.

The 83rd annual ordinary general meeting was held on February 23 at the works of the company at Smethwick, Mr. Bernard D. F. Docker, J.P. (Chairman of the company), presiding.

The Chairman said that the year 1936 was an eventful one in many respects. It was gratifying to know that for the first time in four years the dividend recommended to be paid had been fully earned. That the company had been able to pay dividends over this long period without any appreciable impairment of its sound financial position was convincing testimony to the foresight and prudence of the board in former years in making provision for such contingencies. The improved result had been due to the greatly increased output during the past 12 months, but unfortunately there had been little corresponding improvement in prices. It was to the increased volume that they must look for their profits this year.

He had pointed out last year that the process of raising sale prices when they had sunk below an economic level during prolonged depression was a lengthy and laborious one. This was proving more true than ever today, when they had not only a general improvement in trade but an intensive rearmament programme superimposed thereon. A shortage of supplies had already arisen, particularly in steel, which in various forms was to a very large extent their raw material. Moreover, many of their contracts were for large quantities of rolling-stock, the deliveries of which were spread over long periods, and it was therefore impossible to cover completely the whole of their requirements for many months ahead, though naturally they safeguarded the position so far as possible.

On the assets side of the balance sheet, stock-in-trade and work in progress had increased from £332,768 to £621,397, a rise of no less than £288,629. The trading account showed a profit of £51,781, whereas for the previous year there was

a meagre £3,225. With the balance brought forward from 1935 of £13,089 there was a total of £64,871, which covered debenture interest, directors' fees, and preference dividend, and enabled 1s. a share, or 5 per cent., to be paid on the ordinary shares for the year, requiring £37,781, and leaving £17,382 to be carried forward.

The increased output of carriages and wagons during the past year was due in the main to substantial orders received from the home railways, but he was pleased to say that there had also been a marked improvement in the demand from overseas. They had some orders on hand from South America, but it was particularly from South Africa that most of their export work had come. They were executing at the present time important contracts, both electric and main line passenger stock and wagons for the latter country. The tenders for this rolling stock were open to world-wide competition and consequently prices were low, as the costs of some of their foreign competitors were much below those ruling in this country, where the standard of living was admittedly on a much higher level.

They were hearing from all sides—politicians, bankers, and other experts—how vitally necessary to the prosperity of this country was the expansion of its export trade. They were naturally anxious to foster and stimulate the demand for carriage and wagons from overseas; but he could not help feeling some alarm at the rapidly rising price of materials and at the incessant requests which were being made for higher wages. The resulting higher costs of production might cause a severe check to this long overdue demand from overseas and would certainly increase their difficulties in competing for this work.

In conclusion the Chairman commended the additional proof which Mr. H. J. S. Moyses, their Managing Director, gave year by year of his great qualities.

The report was adopted.

GREAT SOUTHERN RAILWAYS COMPANY

Many traffics improved—Successful tourist campaign—Modernised facilities—Rail-road co-ordination brings more passengers

The annual general meeting of the Great Southern Railways Company was held at the Gresham Hotel, Upper O'Connell Street, Dublin, on March 5, Sir Walter R. Nugent, Chairman of the company, presiding.

The Secretary (Mr. H. S. Coe) read the notice convening the meeting and the auditors' report.

The Chairman said: Although the results of the year's working are on the whole satisfactory and fully up to our expectations, disappointment must be felt—and very naturally—by the preference and ordinary shareholders at the further postponement of dividend payment on those shares. At our last meeting it was suggested—and the suggestion seemed not unreasonable—that £100,000 should be taken out of the settlement of claims fund, and dividends paid on all the company's stocks this year. In view, however, of unavoidable commitments, particularly in regard to road transport, it is our considered policy to conserve the cash position as far as possible, and while the question of the payment of additional dividends, by a transfer from reserve, has received the most careful attention, the directors decided that the adoption of that course would not be in the interests either of the company as a whole or even of the shareholders specially concerned.

The gross receipts from the operation of all railway and road services were £4,366,923, an increase of £225,965 over 1935. The expenditure under the same heads was £3,894,671, an increase of £241,506 over 1935. The net receipts from these services, therefore, were £472,252, or £15,541 less than in 1935. The total net income for the year, after the inclusion of miscellaneous receipts from rents, interest, etc., was £508,792, or £36,975 less than last year.

Reasons for Increased Expenditure

There are four reasons why the expenditure for the year shows an even greater increase than do the gross receipts: (1) The necessity for improved maintenance of the company's property; (2) Increased burdens placed on the company by legislation, e.g., Conditions of Employment Act, 1936, and Widows' and Orphans' Pensions Act, 1935; (3) Increased wages; and (4) A large proportion of our increased receipts, over £100,000, was derived from road merchandise services which, operated as they must be for the present at low competitive rates, show little or no profit.

As the company's net revenue is vitally affected by the above causes I will deal with them categorically and in more detail: (1) The lean years through which all railway companies have been passing have left much to be done in restoring the better standard of maintenance, and renewal of the line, and rolling stock, which prevailed prior to the period of depression; (2) The advantages conferred on our employees by the passing of the Conditions of Employment Act, 1936, and the Widows' and Orphans' Pensions Act, 1935, added no less than £42,000 a year to our expenditure; (3) The partial restoration of the wages cut to our conciliation and salaried grade employees cost the company £35,000. A similar alteration in the wages of the workshop grades increased our expenditure at the rate of £25,000 per annum, while in the omnibus and road freight departments the cost of increased wages was £15,000 per annum; and (4) We have exercised our rights, under the Road Transport Acts, for the acquisition of the businesses of a large number of our chief road competitors, but our obligations under the same Acts, regarding the immediate application of trade union wages and restricted hours of service, will render the operation of those services, at least for some little time, unremunerative. We now await the findings of the Railway Tribunal, before whom the facts of the situation are to be placed, regarding maximum rates and charges. Its rulings will enable us to put this part of the company's undertakings on a

definite and therefore more satisfactory basis for all concerned.

The total advantage to Labour, therefore, which resulted from legislation, and from increased wages, represents a yearly increase of £117,000. I may say that were it not for this additional expenditure, which could not be foreseen, the company would have been in a position to declare a dividend on the preference and ordinary stocks of your undertaking for the past year.

Dividend Arrears Cleared Off

Turning now to the more cheerful side of our report, we have been able to recommend in our dividend statement a final payment of arrears on the guaranteed preference stocks of the company, together with the full dividend for the year 1936. Considering the heavy arrears with which we were faced on the passing of the Railways Act, 1933, the directors are proud to have achieved this position. As you are aware, we are effecting a gradual improvement in our rolling stock and permanent way. Our road fleets of omnibuses and lorries will bear comparison with those of any other company. So far as the expenditure has been chargeable to revenue, this has all been done out of earnings, and no money has been taken out of reserves since 1931. It is expected that less expenditure will be required under this heading during the current year.

The net result of the policy we have recommended to you, and adopted, is that arrears of dividends have now been cleared off, and all future net earnings, after payment of debenture interest and fixed charges, will be available for dividends on the various classes of the company's stocks. Again, owing to our better financial position, we have been able to provide the necessary funds to implement the provisions of the Road Transport Acts, that is, the acquisition of competing road services, and other transport improvements, by the issue of redeemable debenture stock, and it speaks well for the confidence which investors now place in our railway policy that this new issue of stock has been effected at par without difficulty.

Higher Gross Receipts

Now, to mention briefly a few of the more important matters dealt with in the report, and the relevant figures, I have already referred to the substantial increase in gross receipts, viz., £225,965 over 1935. It is interesting to note the following details. Railway traffic receipts show an increase of £79,570, of which £16,891 is due to passenger train traffic, and £62,679 to goods train traffic. The development of new industries in the Free State is reflected satisfactorily in our traffic returns. The products of the various factories are to a large extent rail-borne, for example, Ford motorcars, Dunlop tyres, &c.; bone meal and other products from the new Roscrea meat factory; boots and shoes from Cork and other centres. Substantial increases are shown also in drapery, wines and spirits, bacon, fish, and general sundries, the traffic in which for years past had been dwindling. This is mainly due to the acquisition of the licences of general carriers, and to a general improvement in trade.

The increase in our livestock carryings is due, doubtless, to the continued operation of the coal-cattle pact with Great Britain. Receipts from this traffic show an increase of £14,307, and the increase in number of livestock carried was 83,641. The general position in the railway traffic department is satisfactory, and an increase under all heads of traffic for the year can be recorded.

Each succeeding year shows an expansion in tourist traffic, which is becoming a fruitful source of revenue not alone to the railway but to many other business interests of the

country. Realising its great importance, we have combined with the four British group railways for an extensive and comprehensive organisation in the United States of America, in Canada, and also in London, to secure to Great Britain and Ireland a large quota of the trans-Atlantic tourist traffic which, for many reasons, promises to break all records during the coming season. The gross receipts of our hotel department for the year amounted to £126,998, and were £16,165 better than in 1935. Careful management and increased patronage of our hotels has lifted the net profit of this department from £9,369 in 1935 to the very satisfactory figure of £14,024 in 1936. The Pullman cars were taken over by the company as from October 1, and the three months subsequent trading resulted in satisfactory profits.

The total expenditure on Permanent Way and Works (excluding maintenance of signals and telegraphs) was £448,807, an increase of £2,134 over the previous year. During the year a total of 31½ miles of track was relaid, and, in addition, 38½ miles of re-sleepering was carried out, compared with 23½ miles of relaying and 35½ miles of re-sleepering in 1935. In the early part of 1936, storms of exceptional severity occurred, accompanied by floods, affecting the company's property, but no serious damage resulted. There was a recurrence of storms, and heavy seas, a few weeks ago, but the steps taken by our engineers to protect the coastal lines have proved effective, and little damage resulted. The new junction at Glasnevin, enabling Midland Section trains to work to Westland Row and Dun Laoghaire Pier, was completed during the year.

There has been a certain amount of criticism, mainly from local interests, regarding the closing of Broadstone station, but the directors are satisfied that not only have the company's best interests been served by the change, but the preponderating opinion of the travelling public is that a much more convenient train service has been the result. The policy of gradual improvement in the company's rolling stock has been continued during the year. Twelve bogie passenger carriages of the most modern construction and finish have been provided for the suburban service between Dublin and Greystones. Five modern locomotives have been built for improving services on important branch lines. Forty-one new omnibuses have been placed in service, and 100 new lorries, mainly for the conveyance of beet to the sugar factories, have also been provided. The total train-miles worked during the year was 9,406,961.

Signal and Telegraph Department

The important work of this department has been well maintained during the year under review, and many improvements, securing permanent economies, have been carried out. A new central signal cabin with all-electric apparatus, and modern colour-light signalling, has been provided at West Road, Dublin. This cabin controls the line from Cabra and Liffey Junction to Church Road, and Amiens Street, including the new junction at Glasnevin, and has displaced three old signal cabins, at Newcomen Junction, North Strand, and Broadstone. A similar installation provided at Westland Row in 1935 has proved a great success in the more expeditious and safer handling of traffic. During the current year, colour-light signalling will be extended to Dun Laoghaire, and the old signal cabin at Blackrock will be dispensed with.

While the year 1936 brought increases in the prices of many materials, the company's requirements were supplied, and stocks of stores maintained, by purchases which in the total were £7,300 less than in the preceding year. The main items dealt with were 244,000 tons of locomotive coal, and 2,141,000 gallons of petrol. The value of stores on the books of the General Stores Department at December 31 last was £208,822. The corresponding figure in 1924 was £574,000. This reduction, representing no less than 63.6 per cent. has saved the company a considerable sum in interest, and removed a severe drain on the company's cash position.

Passenger Road Transport

The public continues to favour travel by omnibus, and it is satisfactory to note that our rail and road services have

reached a stage of co-ordination as a result of which an increased number of passengers on the railway can be reported, concurrently with increased patronage of our road passenger services. We carried no less than 23½ million passengers by bus during 1936, an increase of more than 2 million over 1935. An important feature in our passenger road work is the greatly increased facilities for motorcoach tourist traffic. Twelve new tourist coaches were placed on the road last year, and both from the point of view of public satisfaction and the company's revenue, the venture was a success.

Road Freight Department

I have already referred at some length to the circumstances surrounding the transitional period of acquisition of merchandise licences. Our merchandise motor services, comprising both direct door-to-door road services and railhead operation, have during the year 1936 been developed and extended to the greatest possible degree of efficiency and utility, with a view to providing the public with a network of road freight services covering the entire Saorstát, and second to none in its purpose and usefulness.

The 1936-1937 beet campaign, recently concluded, was of the greatest magnitude experienced to date. The provision by the company of a fleet numbering close on 400 vehicles was necessary to meet the haulage of the crop, of which no less than 350,000 tons were conveyed by our own lorries. The national policy of co-ordination of rail and road services is now being implemented, and we have already won back to the company's railway and road services a substantial part of the traffic which had been lost to independent operators during the period of unregulated and uneconomic competition, and the diversion of traffic from the railway has been arrested.

Drumm Battery Trains

Subject to satisfactory conditions from the railway point of view, we have indicated to the Drumm Battery Company our willingness to construct and equip two additional train units to be operated by Drumm batteries, and if agreement is reached as to terms, it is proposed to operate these trains on the line between Harcourt Street and Bray.

I think I have now fully explored every branch of your undertaking, and given as far as I can a lucid exposition of your company's position. It has always been our desire to take our shareholders fully into our confidence, and we welcome their criticism and advice. In view of the very great increase in our gross receipts the results of the year's working would at first appear disappointing, but I think the explanation and figures I have put before you will satisfy you that there is no cause for alarm or pessimism. We hope and believe that the new era we are entering into will be a prosperous one as far as transport in the Irish Free State is concerned, and are quite satisfied to have our policy and activities judged by results.

In conclusion I would like to say that in spite of the very critical period through which we have been passing, more satisfactory relations exist between the various labour unions, and the railway management. The unions, I think, appreciate the difficulty the company has had to face, and also the desperate straits of the shareholders, who have had the capital value of their shares greatly reduced, and have as yet received no dividends.

A word now of appreciation of the loyalty and efficiency of our staff, and I include all grades from the highest to the lowest, office and out-worker, both road and rail; and I say we could not be served by a more efficient and loyal body of men. We receive every day fresh indications of their fidelity and support. I thank them all on your behalf.

Col. O'Callaghan-Westropp, opening the discussion on the report and accounts, maintained that the shareholders had a large claim on the Government, whose policy in some respects led to a great reduction in the purchasing power of the considerable proportion of the populace engaged in agriculture. Mr. Tracey moved that members of the board should forego their fees until an ordinary dividend of at least 1 per cent. was paid. The meeting was adjourned until March 19 to await the result of a poll on this matter.

The report and accounts were adopted.

Financial Assistance for British Railways in Brazil

(From our special correspondent in Brazil)

In a message addressed to the House of Deputies on January 6, Dr. Getulio Vargas, President of the Republic of Brazil, requested authorisation to grant loans of 23,500 and 12,000 contos of reis to the Leopoldina and Great Western of Brazil Railways respectively. He emphasised the precarious financial situation of these systems and stated that it was in the interests of national economy for the Government to do all in its power to help them to overcome their present difficulties. The Ministers of Transport and Finance submitted the necessary explanations justifying the request, which, it was considered, embodied the only adequate solution of the crisis at the moment.

Semi-official Government Statement

Interviewed on the subject, Senor Licinio de Almeida, Secretary to the Minister of Transport, stated that the Government had decided to safeguard the situation, acting mainly on the report of a special commission which had been formed to examine the accounts and working of the Leopoldina Railway. The findings of the commission, under the presidency of Senor Pires do Rio, were most pessimistic, and Senor Almeida added that road competition, and various social laws, had made it impossible for the company to meet its obligations to shareholders. He further stated that the idea of the Government taking over the railway by purchase had been discarded on account of the enormous financial onus involved, and hence it was decided that a loan would meet the requirements of both parties adequately, facilitating the renovation of material and improvement of the service on the one hand, and investing capital in a safe operation on the other. Senor Almeida also gave his opinion that the case of the Cantareira company should be viewed in the same way.

The Leopoldina Case

The Leopoldina Railway in stating its case pointed out that its subscribed capital, distributed among some 20,000 holders, totalled £15,220,000, and to this amount must be added £1,683,000 not yet covered by any share issue, and invested mostly during the last ten years. Calculated on 3,086 km. of fully equipped line, including workshops and rolling stock, the capital invested represented £5,477 a km., a remarkably moderate figure considering that, during the four years of the Campos Salles Government—forty years ago—the Paraná, Minas, and Rio, and Bahia to São Francisco Railways were taken over at valuations of £8,783, £10,882 and £18,266 a km. respectively.

Not until 1928, thirty years after the formation of the present company, did traffic results permit of a 5 per cent. dividend to ordinary shareholders,

who, up to that date, had received an average of only 2 per cent. There never had been, therefore, a period of real prosperity for the company to establish substantial reserves. During the last seven years no dividends had been paid to ordinary or to preference shareholders, whose combined holdings amounted to £9,716,000—nearly two-thirds of the total capital—and since 1933 net revenue had been insufficient to meet, in full, interest on debentures which formed the remaining £5,504,000 of capital. As a result, it had been necessary for the company to resort to the banks in an effort to maintain its credit in London. One issue of debentures amounting to £1,000,000 should have been redeemed in 1933, but the difficult financial situation then prevailing led the holders to grant a moratorium until 1938, and in December of last year all debenture holders agreed to a moratorium for the payment of interest, so that for the present all remuneration on capital had ceased.

Restoration of Credit Essential

Further considerations were that, in spite of the employment of all free and available reserves, the year 1935 closed with a £111,033 deficit, and so it was not difficult to understand how impossible it had become for the company, already indebted to the banks, to restore its credit in London or raise additional capital. The necessity of remedying such a state of affairs was urgent and obvious, as nobody would deny that a reasonable return on capital was just and essential. Also, for a country largely dependent, economically, on the use of foreign capital for its productive works, and still requiring a further influx for its development, the financial history of the Leopoldina served as a sad example to potential investors in new enterprises in Brazil.

The causes of the financial crisis and the insufficiency of equipment, which had been evident since 1930, could be summarised in the progressive decrease of net revenue in local currency, aggravated by its devaluation in sterling, and the doubling of cost of new traction material, rolling stock, &c., in local currency. The increase in operating costs arose from increases in wages, imposed in 1934, and subsequent adjustments, together with the faithful execution of laws fixing annual holidays, accident indemnity, and the 8-hr. working day, had, by 1936, increased expenditure by 10,000 contos a year. Also the abolition, early in 1935, of the facility of making payments at the official rate of exchange increased considerably the cost in local currency of all imported materials and equipment, and the duties imposed on imported coal, together with its higher currency cost, raised fuel costs alone by 5,000

contos a year. Lack of return on existing capital made it impossible to raise further funds abroad for the purchase of new equipment, and the whole of the special 10 per cent. improvements fund was earmarked up to 1939 for the execution of works already authorised, and as a result nothing was immediately available for anything but small purchases of new rolling-stock, locomotives, and railcars.

Temporary Alleviation Neutralised

Foreseeing these difficulties, the administration had made the ominous situation clear to the Government in 1934, and this was fully confirmed in 1935 by the commission organised by the Minister of Transport to examine in detail the company's affairs. As a result of the report of the commission, the Government conceded a readjustment in rates which became operative in February, 1936, and the increases obtained coupled with greater traffics yielded 10,000 contos, but this improvement was offset in the same year by an increase in expenditure, mainly wages, to the extent of 9,800 contos. Consequently, the concession obtained had only temporarily avoided an aggravation of the situation instead of presenting a remedy, and further increases in wages could still be expected.

Government Loan Advocated

For the reasons explained, therefore, it became obvious that the Leopoldina Railway could no longer operate efficiently without Government assistance, and the question before the Government was, what was the remedy to avoid the continuation of a situation which threatened the prosperity of the areas served by the system? The message to Congress dated January 6 last, stated that the Government had set aside the possibility of taking over the railways concerned as being too costly, but at the same time it recognised as urgent the necessity for some formula that would re-establish the company's credit, and at the same time furnish the means for re-equipment. A loan had been suggested, and although this would not provide any return on capital it might at least be devoted to meeting urgent requirements. It was essential, however, that the conditions of such a loan should not be onerous, and that they should provide for repayment over a long period, and be subject to a marked improvement in the finances of the company. Meanwhile the main causes of the trouble, namely, the devaluation of the milreis and the progressive increase in expenditure, would continue, and it would, therefore, be advisable to consider complementary measures to place the company once and for all on a sound financial basis.

It is hoped that the House of Deputies will now examine this situation with sympathy and vote such measures as may enable the company to share in the growing prosperity to which it has always contributed.

Garratt Locomotives in Fast Passenger Service

Tests on the Algerian Railways and the Northern Railways of France

In our issue of March 27, 1936, we gave a detailed description of twelve express passenger Beyer-Garratt locomotives built by the Société Franco-Belge de Matériel de Chemins de Fer in collaboration with Beyer, Peacock & Co. Ltd. for the Algerian Railways. This order, it will be recalled, was placed as a result of successful tests of the prototype, which extended over a period of two years. Ten of the new engines have now been delivered to Algeria, and the first of them have been in service since the middle of last year.

Of great interest is the news that the Northern Railway of France has made arrangements with the Algerian Railways and the builders to retain the 11th and 12th engines for a series of tests on heavy expresses and particularly heavy stopping trains on this company's system. The tests with the 11th engine, which began on February 22 are now in progress. The 12th engine is being fitted for burning oil (mazout) and as the French railways are interested in this method, useful information will be obtained prior to shipment of the locomotive to Algeria.

As regards the performance of the first engines of the new series they are largely employed between Algiers and Oran, a distance of 262 miles. Before their introduction, anything above a 256-ton load was double headed, the timing being 9 hr. In our reference to the tests of the prototype engine in THE RAILWAY GAZETTE of September 29, 1933, we noted that a load of 433 tons had been taken in a running time of 6 hr. 57 min. Parts of the line have now been doubled and alignment improved, so that the new engines with their extra power have proved themselves capable of hauling a heavier load in considerably less time, *e.g.*, 466 tons have been taken on the round trip of 524 miles in a running time of 5 hr. 50 min. each way, an average speed of 45 m.p.h. throughout. The heaviest grade encountered is equivalent to 1 in 45 and there are many curves, though long stretches of easy grade occur. As an indication of the kind of running, it may be mentioned that in one of the round trips of 524 miles, 171 miles were run at a speed of over 60 m.p.h., and 67 miles at a speed of over 65 m.p.h.—world records, it is believed, for sustained high speed by articulated engines. During the Christmas traffic period a tare load of 525 tons (of 2,240 lb.) was taken without loss of time.

The new engines have a tractive effort of 58,102 lb. at 75 per cent. boiler pressure, 5 ft. 11 in. wheels, a superheater surface of 975 sq. ft., and a total heating surface of 3,769 sq. ft., a grate area of 58 sq. ft. and a maximum axleload of 18 tons. The boiler pressure is 284 lb. per sq. in. They have shown themselves easily capable of maintain-

ing the pressure, and the temperature of the superheat normally reaches 750° F. and has reached 788°. Officially it has been stated that the round trip is run with the greatest ease of operation, and that the engines have shown no ill effects from severe endurance trials. They are remarkably free running and have a considerable margin of power in the services they are required to perform.

As a preliminary to the tests on the Nord, which are being run mainly in the vicinity of Lille and on the Paris—Aulnoye main line, certain tests were made on a 13½-mile section of the Algerian Railways between Gué-de-Constantine and Boufarik, this section having characteristics like those of a similar section on the Nord. The runs were made start to stop and were intended particularly to determine the starting and accelerating capacity of the engines on very heavy trains and the development of maximum boiler power on gradients of 1 in 200 to 1 in 1,000. The section has a starting gradient of 1 in 286 followed by 1 in 217 and 1 in 256, and the average gradient for the whole section of 13½ miles is 1 in 472.

The tests were made with tare loads of 675 to 790 tons (of 2,240 lb.), and the average speed with the 750-ton load was 53 m.p.h., from start to stop.

With the 790-ton load a speed of 60 m.p.h. was attained in 5 miles from the start. The most important point was the fixing of the cut-off to obtain the maximum acceleration, and the best results were obtained with the 750-ton load, the starting and acceleration being excellent. It was roughly determined that the cut-off should not be decreased below 22½ per cent. when the speed was below 60 m.p.h. In this test, the speed at six miles from the start was 63 m.p.h. and a cut-off of 17.5 per cent. and finally 15 per cent. produced acceleration, on a rising gradient of 1 in 556, to 68 m.p.h.; the final part of the run was completed with a 10 per cent. cut-off.

The test demonstrated that the high pressure could be maintained without difficulty—never falling below 250 lb., and being mostly above 270 lb.—that the problem of acceleration up to 65 m.p.h. was solved by this type of engine, and that the boiler maintained a continuous output of 3,600 h.p. without loss of water level. The firing rate in the 790-ton test amounted to 143 lb. per sq. ft. of grate area per hr., and, in the 750-ton test, 164 lb. Superheats up to 750° F. were easily obtained, and in the 750-ton test averaged 730°.

A return run from Boufarik over a distance of 16½ miles brought out the very free running characteristics of the engine and by-pass action effect of the Cossart valve gear. At 77 m.p.h. the regulator was closed, the speed after 10½ miles still being 40 m.p.h., or an average decrease of 3.5 m.p.h. on an average down gradient of 1 in 714.

Gloucester G.W.R. Ambulance Corps Dinner

The silver jubilee of the Gloucester G.W.R. Ambulance Corps was celebrated by a dinner at the Spread Eagle Hotel on Saturday, February 27, when Mr. H. Williams, Divisional Superintendent and President of the corps, was in the chair. He was supported by the Deputy Mayor (Mr. George Matthews, J.P.), the City Member (Mr. H. Leslie Boyce), Dr. J. F. H. Stallman, Mr. L. J. A. Callaway (District Goods Manager), Mr. F. G. Wainwright (Divisional Superintendent, Cardiff), Mr. H. S. B. Whitley (Divisional Engineer, Wolverhampton), Mr. T. C. B. Davies (Assistant Divisional Engineer, Gloucester), and other officers of the company and supporters of the movement.

The President, welcoming the company, said he knew of no other event on the Great Western Railway quite like that gathering, especially in regard to the amount of civic and public support which it received. He paid high tribute to the work of Mr. W. H. J. Daniell, who was retiring from the secretaryship of the corps after 25 years in that office.

Mr. Leslie Boyce, proposing the toast of "The Great Western Railway Gloucester Combined Ambulance Corps," referred to its fine record. During the quarter of a century of its existence the members had received

2,212 first aid examination awards, and in addition had won 57 of the company's gold medals for 15 years' efficiency, 34 bars for 20 years, 15 medals for 25 years, 8 for 30 years, and two for 35 years' efficiency, a record of which they were justly proud. Three of their members had been honoured by election as Officers of the Order of St. John of Jerusalem, and five, including their former President, Mr. S. Morris, as Serving Brothers, while the Vellum Vote of Thanks of the Order had been awarded to another member.

The Deputy Mayor, referring to the splendid work accomplished by the corps, said he knew of no work more important. He then presented the "Alice Whitley" cup awarded for the most efficient case of first aid rendered during 1936, to Mr. J. H. Dee, and the "S. Morris" cup for 1936 to Mr. A. Symonds; and also distributed gold efficiency medals and bars.

Mr. Whitley congratulated Mr. Dee on having won the trophy for the second time, and said the cup would, as time went on, be evidence of fine pieces of ambulance work in the city.

Mr. Callaway proposed the toast of "The Doctors," and Dr. Stallman replied. Other speakers were Mr. Wainwright, the Town Clerk, and Mr. Dee.

Personnel and Railway Goods Department Problems

Mr. A. Maynard, Chief Goods Manager, G.W.R., presided at a well-attended meeting of the G.W.R. Lecture and Debating Society at Paddington station on March 4, when Mr. D. Blee, District Goods Manager, Shrewsbury, read a paper on "Personnel and Goods Department Problems."

The speaker's remarks fell into two broad categories: first, a statement of the commercial problems with which the Goods Department was faced, and then a consideration of staff requirements to grapple with the problems to the best effect. He said that to those engaged in goods department work one thing stood out above all others—the rapidity of change in the modern transport world. The vigour of road motor competition was pointed out. Traders had undoubtedly welcomed this competition, and had not been slow to test the possibilities of economy and service to be derived from road haulage, nor to use it as a lever on the railways. Many traders held the view that in business matters the railways moved more slowly than their competitors; what foundation there might be for this was due to the power of direct decision enjoyed by the road haulier, as compared with the more involved processes necessary on the part of the railways. Solution of the problem of obtaining business was bound up in the factors of representation, service, facilities, rates, and the broad term "relations." To ensure success it was necessary that in all grades and stages in the organisation the personnel should be fully qualified for their jobs. There was a vital link existing between the problems of the department, the policies for dealing with them, and the staff who carry through and in turn contribute to those policies.

Mr. Blee illustrated the company's needs in the matter of personnel by outlining the qualifications which ought to be possessed by the occupiers of three key positions; the representative, the goods agent, and the head of a headquarters' rates section. He found these qualifications to be of a high and varied order.

Turning to the subject of recruitment and training of staff, the speaker discussed traffic apprentice schemes, the proposed staff training college adumbrated by the London Midland & Scottish Company, and the various methods adopted by Continental and American railroads, and the Civil Service, banks and large business houses in this country in order to secure the best type of personnel and training. Mr. Blee set out the clerical staff requirements in filling posts in the G.W.R. Goods Department on the basis of the following approximate percentages: 4.41 per cent. junior posts; 44.6 per cent. grade 5 posts; 21.35 per cent. grade 4 posts; 11.87 per cent. grade 3

posts; 7.36 per cent. grade 2 posts; and 4.98 per cent. grade 1 posts. He said it might be thought that the series of meshes in the promotional sieve would sift in each gradation the perfect product. In practice, however, he thought it left too much to chance. He thought the present junior clerks' entrance examination was on too low a level and should be remodelled to a standard broadly equivalent to Matriculation. A later examination should require evidence of continued general education, and apply a test in railway accounts, goods rates, and station working, railway geography and railway salesman-

ship. He thought the production of standardised instructional books was also necessary.

Other matters mentioned by Mr. Blee were the possibility of granting a salary advancement for the attainment of certain degrees, with specialisation in transport; an increase in the number of women employed at large stations, district offices, and headquarters, and reports of appraisement on the work and personality of members of the staff, with a view to fitting them into posts of appropriate type and responsibility.

The Chairman initiated a lively and well-sustained discussion. There was among the speeches both criticism and approval of the Speaker's views, but general agreement that the paper was a thoughtful and thought-provoking production.

Permanent Way Institution Dinner at Sheffield

The sixteenth annual dinner of the Sheffield Section of the Permanent Way Institution was held on March 9 under the chairmanship of Mr. Joseph Walton. Mr. W. A. Willox, proposing the toast of "The City and Trade of Sheffield," remarked on the appropriateness of Sheffield for the holding of the annual function they were now enjoying. From a historical point of view, he mentioned that the first iron platelay in the world was laid to connect the Duke of Norfolk's collieries with the city in 1777, and it was in Sheffield that the first book dealing specifically with railway track was published by the Duke in 1797. The industry for which Sheffield was most famous, too, was the basis of the modern railway as we knew it, and indeed without that industry the Permanent Way Institution itself could not exist. This was the steel age, and modern industrial civilisation might be likened to a steel-framed building; but there were dangers, for not only was modern civilisation framed in steel, but steel was the basis of modern war. The exaltation of work—a means—into an end, implicit in the frequently reiterated statements of politicians that the urgent problem of the day was to provide full employment for everyone, implied that work rather than leisure—which meant individual freedom to choose one's own work—was the aim of existence. This fallacy deserved careful scrutiny in the light of modern dangers.

The Lord Mayor (Councillor Mrs. A. E. Longden, J.P.), who responded, pointed to the very fine tramway system of which Sheffield was justly proud, and the responsible officers of which were connected with the Permanent Way Institution. Referring to the question of work, she mentioned that there was still unemployment in Sheffield despite the better times that had recently come about, and it did strike her as odd to hear of men working long hours, with others unemployed.

Mr. Joseph Ward, J.P., Chairman of Thos. W. Ward Limited, proposed the

toast of "The Permanent Way Institution," and discussing the present wave of prosperity which Sheffield was enjoying, emphasised that scarcely 10 per cent. of the work done in Sheffield now represented war materials. Railways were consumers of large quantities of iron and steel necessary for their running, and although railways must be used in the course of war, the materials absorbed by them could not be properly described as war materials. In the absence of Mr. W. K. Wallace, President of the institution and Chief Engineer of the L.M.S.R., Mr. F. Lawson, the Treasurer, responded to this toast and briefly recounted the world-wide ramifications of the institution's work.

Mr. Donald D. Shaw proposed the toast of "The Chairman," which was carried with enthusiasm, Mr. Walton being a very long standing member of the Sheffield Section of the Permanent Way Institution, as well as a prominent citizen connected with one of Sheffield's principal industries. Besides responding, Mr. Joseph Walton took the opportunity to wish, on behalf of the gathering, many happy returns to Councillor Henry Kirk, who next day would celebrate his seventieth birthday, and with whom he had worked in complete harmony for more than a quarter of a century. Mr. Kirk had become a member of the institution more than 30 years ago, had been Chairman of the Sheffield Section three times, and on the General Council for many years.

Mr. W. B. Pickering, Director of Hadfields Limited, gave the toast of "The Visitors," and supplemented Mr. Ward's remarks by saying that the prosperity of Sheffield was well established long before the present defence programme was introduced, and was due mainly to the tariff policy of the present Government. Mr. Pickering expressed the pleasure of the gathering at the presence of the Lord Mayor, to whose able presidency of the administration of the city he paid a tribute. Mr. E. S. Semper and Mrs. J. Walton, responded on behalf of the visitors.

The Evolution of Permanent Way

(See editorial note on page 470)

To those engaged in any branch of engineering activity there is always an attraction in the story of how their particular branch was evolved. On Monday last, Mr. Charles E. Lee, Assistant Editor of *THE RAILWAY GAZETTE*, presented a paper to the Permanent Way Institution on the subject of the evolution of permanent way, and in tracing the story from very early times fully annotated his paper in order to support his contention that various errors had been repeated extensively and were widely accepted as facts. Broadly, the conclusions to which his remarks led were:—

I.—That a specialised form of track (with the concomitant of a standard gauge) was of great antiquity;

II.—That the process of evolution was not continuous;

III.—That the form of permanent way in various ages was designed to meet the needs and uses of the vehicle;

IV.—That the flanged wheel running on the plain rail long preceded the plateway; and

V.—That the modern standard gauge owed its origin directly to the foresight of George Stephenson, and indirectly to the needs of the vehicle.

Mr. Lee outlined what was known of specialised tracks from about 2245 B.C. in Babylonia, Assyria, Phœnicia, Greece, and Rome, and showed that some of the essentials of the railway were used many centuries ago, so far as they were applicable to prevailing conditions. Heavy engineering works were undertaken to secure level tracks; standardised axle lengths were often used, sometimes in conjunction with parallel lines of stone and sometimes to enable vehicles to run in rutways; a standard gauge, varying in different parts of the world from 4 ft. 6 in. to 5 ft. 4 in., was a known feature; and a single line of way with passing places was recognised as a measure of economy where traffic was not heavy.

After the fall of the Roman Empire there was no evidence of road maintenance or construction on a national basis, and even the use of the wheeled vehicle seemed to have been severely limited. During that period there were no traces of rail transport and it was extremely unlikely that ancient practice had any effect on the re-introduction of rails. On the contrary, a recognisable form of narrow-gauge mineral railway was developed as an adjunct to the mediæval mining industry of Central Europe. Researches of German historians tended to show that wooden track lines were used in the Harz mines and in those of the Tyrol as early as the twelfth century, but there was little definite evidence of the form of these lines and their vehicles until the sixteenth century, when various illustrated works on mining practice were published.

A fascinating accompaniment to this part of the paper was a series of lantern

slides made from early and scarce volumes, including an illustration of a mine railway published about 1519 in a work of which no copy is known to exist in this country. Wooden track laid on transverse sleepers; points; flanged wheels; and even iron wheels; were shown to have been used prior to 1550. Subsequently strips of iron called *Reibeisen* (rubbing iron) were fixed on top of the wooden rails at points of great friction such as on curves and gradients.

While there was little doubt, therefore, that the origin of modern railway permanent way for the exclusive use of vehicles with flanged wheels was to be found in mediæval German mining practice, the development of the standard gauge public railway took place entirely in Great Britain. So much was this the case, that, although mining railways continued to be used on the Continent, European countries, as indeed all other parts of the world, received from us almost as an invention the public railway.

Although rails were referred to in early years, the term for a line of rails in Great Britain was "waggon-way." "Tram-way" and "tram-road" were not words of great antiquity (contrary to popular impression) although "tram" was. A legal decision of the reign of James I (1601) clearly showed the use in this country of the word tram in the same sense as in old Scandinavian, namely, a beam of wood. The application of the word to a wheeled vehicle followed many years later, and sixteenth century references to "a highway or tram" might be assumed to denote a log road.

The first certain traces of railways in England were in 1597 near Nottingham and there was evidence that the particular line was laid in the summer of that year. The proceedings of the Court of Star Chamber indicated the existence of a line in Shropshire in 1606, and the North-East Coast was shown to have adopted railways about 1609. As early as 1628 "railway" nationalisation was projected. A 4-ft. gauge waggon-way from Ravensworth colliery to Dunston staith was laid in 1671 and part of this track had been in continuous use ever since. Flanged

wooden wheels, and from about 1731 iron wheels, ran on wooden rails laid on "dormant timbers," and substantial engineering works such as embankments, cuttings, and bridges, were undertaken to secure suitable gradients.

Apart from English use of *Reibeisen*, iron rails appeared to have been used first in 1767. This experiment, at Coalbrookdale, was shown to have been on an ordinary railway with flanged-wheeled-vehicles, and not a plateway as had often been stated. The plateway of angle iron might be traced only to 1776, and was not a stage in the evolution of the modern railway, but special provision for flat-tired vehicles that were required to make part of their journey on the ordinary road. The word "tram-road" appeared first in 1793.

Scotland was credited with the introduction of the wrought-iron rail, first in the earliest known use (1785) of wrought-iron bars laid on timber rails; then with the adoption of complete wrought-iron rails; and subsequently with the direct inspiration to John Birkinshaw to invent his famous Bedlington rails of 1820.

Gauge was shown to have varied between one waggon-way and another, and the apparent fortuitous selection of 4 ft. 8 in. by George Stephenson presumed to have resulted from the fact that his early railway experience was gained on a line of that gauge—at Killingworth. He foresaw the inconvenience of breaks of gauge and influenced the adoption of a standard. His locomotives carried it to Germany, Belgium, and elsewhere.

In conclusion Mr. Lee showed a series of slides indicating that practically every early form of permanent way—wooden rails, guide wheels instead of flanges, plate rails, single-rail points, and so forth—still survived in service in various parts of the world.



Mining railway illustration of 1519

PARLIAMENTARY NOTES

Railway Electrification

On the order for the second reading of the Southern Railway Bill in the House of Commons on March 3,

Brigadier-General Clifton Brown moved the rejection of the Bill. He said the Bill was concerned with the electrification of the railway, and many people were concerned to find that there was no adequate protection afforded to the public against the live wires. The Electric Lighting Act of 1888 provided that where an electric line was laid down and was not entirely enclosed, the Board of Trade might require the line to be used under conditions that protected the public. Some notice should be taken of that requirement. He suggested that a guard of wire some six feet high should be put up, so as to prevent children and animals getting on to the lines and being electrocuted. He wished to draw the attention of the Minister for the Co-ordination of Defence to the fact that the Southern Railway was being electrified under one system, while other companies were using another system. It might well happen in case of attack that troops would not be able to get through London because the road junctions had been destroyed, and they might have to be diverted at Reading or somewhere else. It was therefore important that running stock should be interchangeable.

Rear-Admiral Beamish (C.—Lewes), who associated himself with the previous speaker, said he would pay a tribute to the Southern Railway for its enterprise and the progress which it had made. He was informed that when the proposal to use the live rail system was originally discussed in 1927 and 1931 by committees of rural interests, the Chairman of the railway had said that they took ample care to keep human beings from the lines; but he thought he could show that that was not the case. Foxes, badgers, otters, and other wild animals were electrocuted by the live rails or crept away from the live rail terribly injured. He knew people living near the railway who had to give up keeping dogs because they got on the rail and were electrocuted. He maintained that in his own constituency the fences were entirely inadequate to prevent human beings climbing over.

Sir George Courthope (C.—Rye), replying to criticisms, said there was not a single level crossing over a live rail. The live rail was stopped at least nine feet from the side of the crossing, and the current was taken in an insulated cable underneath the line. Where cattle had to be driven across, a cattle grid was put at both sides of the crossing. The third rail had become standardised, and it was not within the power of the company to change the system without a break of the standardisation order. Although there was a small element of danger in the

live rail, this was very much exaggerated. In three years only six horses, two bullocks, and one pig among farm animals had been electrocuted on the 600 miles of electrified rails of the Southern Railway system. It was quite impossible to fence the line against children. As to wild animals, experience suggested that they were learning how to avoid shocks. The Southern Railway employed many thousands of workers on that part of the line electrified by the third rail, and they had not a single fatal accident arising from the live rail. On the other hand, there were several fatal accidents on the comparatively short distance of overhead line of the London Brighton & South Coast Railway during the four years that it was in use.

Mr. Boyce (C.—Gloucester) said that despite predictions years ago that the introduction of railways would mean the end of foxhunting, there was more of the sport today in those areas where trains ran than there had been before in our history.

Earl Winterton (C.—Horsham) said that they asked that reasonable precautions be taken that the live rail be made safe. Danger could be avoided by adopting fencing.

Captain Austin Hudson (Parliamentary Secretary to the Ministry of Transport) expressed the hope that the Bill might be allowed to proceed to Committee. The live rail system was one of the two systems of railway electrification approved by the Minister of Transport in the Railways Standardisation Order of 1932. The Minister had not thought it fit to take objection to the system on the question of safety, although it must not be thought the system would be regarded by him as the most suitable or economical for new extensions where different technical traffic conditions existed. Very careful consideration had been given by his Department to the question of safety. There were certain obligations laid down regarding fencing, and in practice the railway companies went further than their obligations. Special attention was paid to places where trespass could be expected. The total number of fatalities due to contact with live rails on the Southern Railway in five years was 21, of which 19 were cases of trespass. He would consider what had been said in order to see whether there were any safeguards which were both necessary and practicable.

Mr. L. M. S. Amery (Sparkbrook—C.), said that at level crossings the live rail was disconnected for some distance on either side, and the risk was infinitesimal. The one thing that caused anxiety was the danger to children who could not read notices, and who made deliberate attempts to get over fences. The expense of board-

ing the third line was something in the nature of £430 per mile. The real objection to boarding was that it added to the difficulties of platelaying and inspection, and there was also the danger of sparks, paper and straw getting under the board and increasing the risk of fire. The company was ready, whenever representations were made about a specific locality where there was danger, to make an attempt to meet them.

The Bill was read a second time, after the amendment for the rejection had been negated without a division.

Questions in Parliament

Conditions of Issue of Tickets

Mr. T. E. Groves (Stratford—Lab.) on March 3 asked the Minister of Transport whether he was aware that many railway tickets were issued on condition that neither the holder nor any other person should have the right of action against the company or other owners of any vehicles or premises upon which such tickets were available in respect of injury, loss or delay.

Mr. Hore-Belisha (Minister of Transport): I am awaiting from the railway companies the result of the further examination which I asked them to make of this matter.

Electrification of Railways

Mr. Ellis Smith (Stoke-on-Trent, Stoke—Lab.) on March 3 asked the Minister of Transport if he could inform the House about the proposed electrification of railways; and what sections of lines were to be electrified within a 50-mile radius of Manchester.

Mr. Hore-Belisha: In the area in question, electrification is being undertaken by the L.N.E.R. of the line between Manchester and Sheffield and by the L.M.S.R. of the Wirral section of its railway, from West Kirby and New Brighton to Birkenhead Park.

Mail Transport Expenditure

Major Procter (Accrington—C.) on March 8 asked the Postmaster General if he could give the present percentage of expenditure upon the transport of internal mail by air, rail, and road, respectively; and what was the approximate annual volume of such mail now transported principally by each of these three methods.

Major Tryon (Postmaster General): It is estimated that of the total expenditure incurred in the year 1936-37 upon transport in connection with the internal mail services, the proportions attributable to air, rail, and road conveyance are: air, 0.2 per cent.; rail, 76.6 per cent.; and road, 23.2 per cent. Since, however, the cost of conveyance of mails by road covers also a large percentage of collection and delivery work which cannot be segregated, these figures do not represent even approximately the correct proportion of expenditure attributable to transport as such.

They are, however, all that is available. Information as regards the volume of mail transported in the respective categories is not available.

Working of Road and Rail Traffic Act

Mr. F. Viant (Willesden, W.—Lab.) on March 8 asked the Minister of Transport, whether he had considered the communication from the Willesden Chamber of Commerce urging the appointment of a committee for the purpose of the collection of evidence from all interested parties on the workings of the Road and Rail Traffic Act, 1933, with a view to considering as to whether or not amending legislation is desirable; and was he prepared to adopt the suggestion.

Mr. Hore-Belisha (Minister of Transport): Yes sir, and the Transport Advisory Council was set up by the same Act for this purpose.

Railway Electrification Schemes

Sir William Edge (Bosworth—Lib. Nat.) asked the Minister of Transport whether any suggestions had been put forward by his department to the railway companies concerned for the electrification of suburban lines feeding the chief Midland cities; and, if not, whether he would make inquiries as to the possibility and desirability of action along the lines suggested.

Mr. Hore-Belisha (Minister of Transport) wrote in reply: The responsibility for initiating railway electrification schemes rests with the railways.

Staff and Labour Matters

Holidays with Pay

The question of holidays with pay has recently been given some prominence. A private members' Bill, requiring every employer to give an annual holiday of not fewer than eight clear consecutive days duration to every worker who has been in his employment for twelve months or longer, received a second reading in the House of Commons on November 27, 1936. Despite this fact the Bill aroused considerable opposition and on March 3, during consideration by Standing Committee "A" of the House of Commons, an amendment was carried to the first clause by which the Bill was deprived of its obligatory character. In consequence the promoter of the Bill informed the committee that he did not desire to proceed further with it and the committee thereupon decided to report the Bill, as amended, to the House of Commons. On February 23 it was announced that the Minister of Labour had decided to set up a Government committee of inquiry to consider the question of annual holidays with full pay for all employed persons. Lt.-Col. Muirhead, Parliamentary Secretary to the Ministry of Labour, informed Standing Committee "A" of the House of Commons that the Minister "intends to set up a small committee of investigation on which both

employers and the trade unions will be represented. The committee will investigate the present position with regard to the granting of holidays with pay, the practicable limits within which this may be extended, and will give its considered view of the most suitable line of action."

General Managers meet A.S.L.E.F.

Arising out of the position created by the rejection of the society's claims by the Railway Staff National Tribunal in December last, a further meeting between the general managers and the executive committee of the Associated Society of Locomotive Engineers and Firemen was held in London on Wednesday last, March 10. The society's special delegate conference had not accepted this decision and instructed the executive to negotiate with the companies. At an earlier joint meeting—on February 15—it was stated that the discussion had been adjourned until the 1936 accounts for the four companies were available.

It is now known that the net revenue for 1936 totalled £35,730,561. In passing, it may be pointed out that this sum is nearly two million pounds lower than the 1930 figure (£37,716,114) which the National Wages Board had before it during its exhaustive review of the companies' economic position early in 1931. The board then came to the conclusion that the companies should be granted substantial relief in their labour costs and by Decision No. 119, dated March 5, 1931, varied certain conditions of service and made provision for a deduction from all earnings of 2½ per cent. with a further deduction of 2½ per cent. from all earnings in excess of 40s. a week. At the present time a deduction of 1½ per cent. from all earnings remains and, in the case of conciliation grades, reduced rates for night duty and Sunday duty are still operative.

After the meeting last Wednesday the following official statement was made:—"Following upon the joint meeting held on February 15 last, the general managers of the four main-line railway companies met the executive committee of the Associated Society of Locomotive Engineers and Firemen in London this afternoon. The companies' financial results for 1936 were examined and discussed, and the meeting was adjourned for further consideration by the parties."

Joint Meeting of Railway Trade Unions

A meeting is being held today (Friday, March 12) at Unity House, of the executive committees of the three railway trade unions—the National Union of Railwaymen, the Railway Clerks' Association, and the Associated Society of Locomotive Engineers & Firemen—and it is believed that the unions will be considering the joint presentation of wage claims to the railway companies. Decision No. 1 of the Railway Staff National Tribunal is operative until August next.

Railway and Other Reports

Entre Rios Railways.—The directors have decided to pay on April 1 one year's arrears of interest on the 4 per cent. debenture stock, together with 5 per cent. per annum interest on such arrears as provided for under the moratorium scheme. The total payment amounts to 4½ per cent., less tax.

Canadian Pacific Railway.—The preliminary financial statement for the year 1936 shows that after providing for depreciation of steamships and the payment of fixed charges, the balance of income transferred to profit and loss was \$6,029,184 (£1,205,836), an improvement of \$3,197,100 (£639,420) on 1935. Gross earnings increased by \$8,843,859, and working expenses, including taxes, by \$7,970,271, leaving net earnings of \$23,311,111 (£4,662,222), which were higher by \$913,587 (£182,717) than in 1935. Other income, less steamship depreciation, amounted to \$6,631,371. Fixed charges (\$23,913,298) were \$246,639 lower. The profit and loss balance at December 31, 1935, was \$139,504,688, and adding the \$6,029,184 transferred from income account, makes a total of \$145,533,872. From this is deducted a total of \$7,001,169, including \$3,659,645 to investment reserve, equivalent to deficiency for meeting "Soo" obligations, and a further sum for loss on lines abandoned, etc. The profit and loss balance at December 31, 1936, was \$138,532,703, and of this balance \$3,901,187 is utilised for payment of the 1 per cent. dividend on the 4 per cent. preference stock.

Bristol Tramways & Carriage Co. Ltd.

—For the year 1936 the report shows that the balance on revenue account after providing for depreciation was £184,028, an increase of £41,909 on 1935. Debenture interest requires only £13,330, against £37,641, owing to the redemption of the 4½ per cent. stock in February, 1936, and the net result, after writing £4,792 (against £4,399) off development expenditure, is a profit of £162,705, an increase of no less than £67,165 in comparison with 1935. During the year the issued share capital has been raised from £1,500,000 to £2,053,308 by the issue of 553,308 new ordinary £1 shares. The company acquired by share exchange nearly the whole of the issued share capital of the Bath Electric Tramways Limited, and Bath Tramways Motor Co. Ltd.; this transaction involved the allotment of 50,308 ordinary shares at a premium of 27s. 6d. a share, and the amount of this premium has been carried to reserve fund for contingencies and renewals. Other interests were also acquired and certain new properties were purchased. The businesses of two subsidiaries were wound up and absorbed into the parent company's business. The dividend on the ordinary shares for the year 1936 is 8 per cent., compared with 6 per cent. for 1935, the sum of £15,000 is again added to reserve for contingencies and renewals, and the balance forward is raised from £10,366 to £15,556.

NOTES AND NEWS

Air-conditioning in U.S.A.—On January 1, there were 8,078 air-conditioned passenger cars on the U.S.A. railways, of which 4,152 belonged to the Pullman Company.

The Granton-Burntisland Ferry.—On March 2, the famous L.N.E.R. ferry steamer *William Muir* made her last crossing between Granton and Burntisland, and is now to be broken up. The story of this ferry service was briefly outlined on page 337 of our issue of February 19 last.

L.M.S.R. Photographic Society Exhibition.—The L.M.S. (London) Photographic Society has been holding its twelfth annual exhibition at Euston station throughout this week. The opening ceremony was performed by Lady Stamp. The exhibition is open to amateur photographers in Great Britain and Northern Ireland, with a special class exclusively confined to L.M.S.R. employees.

Tyne Dock Purchase.—An early completion is expected of formalities in connection with the sale by the L.N.E.R. of the Tyne Dock, near Jarrow, to the Tyne Improvement Commission for £600,000. Plans for improvements to the dock have already been formulated by the commission, and include construction of a deep-water quay for ocean liners, towards the cost of which the Commissioner for Special Areas has made an offer of £270,000.

Newcastle High Level Bridge Tolls.—Negotiations between the Newcastle and Gateshead Corporations are reported to be making satisfactory progress towards the freeing of the High Level Bridge at Newcastle from tolls. The corporations have reached an agreement as to tram fares, and there is now no obstacle to completion of the deal with the L.N.E.R. It is expected that the bridge will be freed from tolls on or before Coronation Day, May 12.

New G.W.R. Platform Buffet Car.—A new type of platform refreshment trolley—a movable miniature buffet bar—has just been introduced by the Great Western Railway at Paddington station. It is nearly twice as large as the old trolleys; carries twice the variety of food and drinks; and runs on pneumatic wheels. All the foodstuffs are kept under cover in glass and chromium-plated cases, and the water for tea is heated by a new type of gas carried in a cylinder on the trolley itself.

Loudspeakers at Paddington.—Loudspeakers proved very useful at Paddington station on Wednesday morning, when it was decided just before 10 o'clock that there would be no racing at Cheltenham that day. Passengers were already entraining in a special restaurant car train due to leave at 10.3. It was announced that the train would not run, and that passengers could obtain a refund for their tickets at the booking offices

where they had been purchased. Two trains were already on their way to Cheltenham, but one was stopped at Reading, and the other at Didcot.

Derailment near Boston, L.N.E.R.—A passenger train from Lincoln to Boston became derailed at Langrick near Boston on March 8 damaging the permanent way and several of the coaches, but none of the passengers suffered serious injury.

Developments at Fleetwood.—An expenditure of £40,000 has been authorised by the board of the L.M.S.R. for the construction of an up-to-date slipway at Fleetwood, with the object of keeping the West Coast fishing port abreast of the latest developments in the trawling industry. The slipway, which will have a deadweight capacity of 1,050 tons—substantially in excess of the largest of the three appliances at present available—will be built on the site of the first of the three existing appliances.

London Transport Coronation Arrangements.—London Transport Underground trains will run throughout the night of May 11–12 for the convenience of spectators proceeding to the Coronation route, and these services will be extended two hours after the normal time of suspension on Coronation night, May 12. Seven hundred extra railway staff will be engaged. More than 50 bus routes will be reorganised on Coronation Day, being diverted to a ring of 12 special terminals arranged within the Coronation area. In conjunction with the police, a souvenir map in seven colours will be issued to the public, which will enable

the appropriate bus, train, or coach routes to the various vantage points to be selected at a glance. To handle the heavy Underground traffic, the eastbound platform at Charing Cross is being lengthened by 100 ft., and a new exit subway is under construction at Tottenham Court Road. Additional temporary ticket offices will be erected, and traffic inquiry bureaux will be available at several principal stations.

New Sheffield Locomotive Depot Order, L.N.E.R.—The order, reported in our Contracts and Tenders page this week, for a 250-ton mechanical coaling plant for the steam locomotives to be stabled at the joint steam and electric locomotive shed to be erected at Darnall, Sheffield, is the first order to be placed by the L.N.E.R. under the £2,500,000 Manchester-Sheffield electrification scheme. Features of interest in the equipment of the new shed are mentioned in the paragraph already referred to.

Offices of the Superintendent of the Line, G.W.R.—Last week-end the first sections of the office of the Superintendent of the Line moved into their new quarters in the block of offices at the Praed Street end of Paddington station, on the departure side facing Eastbourne Terrace. These new offices are a further stage in the scheme of rehousing and centralising the headquarters' staffs, now nearing completion. The new building is one of six floors, built over the Registration offices, and in design follows the style of the adjoining buildings. The building, faced with reconstructed stone, is entirely of fire-resisting material, having steel framing and steel and concrete floors, while the partitions between the various offices are of steel and glass. A system of central heating and mecha-



Sir Josiah and Lady Stamp at the L.M.S.R. photographic exhibition

nical regulation of ventilation has been installed throughout. Entrance to the new offices is from the approach road to the station, and all floors are served both by lift and a broad staircase. The sections of the office that will be housed in the new building will be those dealing with claims, excursion traffic, freight train running, new works, passenger train running, rates and fares, rolling stock, and staff and general sections. These sections, representing a staff of 160, will be moved in at weekly intervals so as to afford as little dislocation and inconvenience as possible.

Return of the Wedgwood Committee.—On their return, on March 4, from their tour in India, Sir Ralph Wedgwood and his committee were met at Victoria by Mr. R. Mowbray (Government Director of Indian Railways) and Mr. G. W. Baxter, both representing the Secretary of State for India. In a brief interview, Sir Ralph said that their report would not be ready before April, and added that they had travelled 10,000 miles during their three months' investigations and had visited Delhi, Calcutta, Bombay, Madras and Lahore.

He also commented on the facts that in India the rail mileage exceeded that of the roads, and that road competition was not yet very acute. The trains in India were, he remarked, made up of good rolling-stock and they ran fairly punctually.

L.M.S. (London) Golfing Society.—The tenth annual dinner of this society was held at the Stephenson Rooms, Euston Hotel, on Friday, March 5, when a company of 76 members and guests assembled. Following an excellent dinner, a musical programme interspersed with interesting speeches, was provided, and the trophies competed for during 1936 were presented to the winners. The chair was occupied by the Captain of the society (Mr. A. F. Bound) and amongst the members present were :—

Messrs. S. B. Carter, A. W. Donaldson, A. Eddy, C. E. Fairburn, J. F. Gee, G. Morton, H. V. Mosley, R. A. Riddles, F. Roberts, F. Smith, W. A. Stanier, S. J. Symes, E. Taylor, W. R. Worrall. Visitors included Sir Ralph Cope (G.W.R.); Major L. F. S. Dawes and Col. G. S. Szlumper (Southern Railway); Messrs. H. W. Powell (L.N.E.R.), G. L. Darbyshire, A. Newlands, W. V. Wood, and many others.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 9th Week			Totals to Date		
	1937	1936	Inc. or Dec.	1937	1936	Inc. or Dec.
L.M.S.R. (6,877½ mls.)	£	£	£	£	£	£
Passenger-train traffic...	378,000	366,000	+ 12,000	3,375,000	3,298,000	+ 77,000
Merchandise, &c. ...	494,000	492,000	+ 2,000	4,296,000	4,154,000	+ 142,000
Coal and coke ...	290,000	272,000	+ 18,000	2,609,000	2,610,000	- 1,000
Goods-train traffic ...	784,000	764,000	+ 20,000	6,905,000	6,764,000	+ 141,000
Total receipts ...	1,162,000	1,130,000	+ 32,000	10,280,000	10,062,000	+ 218,000
L.N.E.R. (6,332 mls.)						
Passenger-train traffic...	254,000	243,000	+ 11,000	2,260,000	2,211,000	+ 49,000
Merchandise, &c. ...	328,000	321,000	+ 7,000	2,921,000	2,858,000	+ 63,000
Coal and coke ...	250,000	249,000	+ 1,000	2,367,000	2,416,000	- 49,000
Goods-train traffic ...	578,000	570,000	+ 8,000	5,288,000	5,274,000	+ 14,000
Total receipts ...	832,000	813,000	+ 19,000	7,548,000	7,485,000	+ 63,000
G.W.R. (3,738½ mls.)						
Passenger-train traffic...	160,000	157,000	+ 3,000	1,410,000	1,388,000	+ 22,000
Merchandise, &c. ...	198,000	192,000	+ 6,000	1,713,000	1,657,000	+ 56,000
Coal and coke ...	114,000	104,000	+ 10,000	1,055,000	1,038,000	+ 17,000
Goods-train traffic ...	312,000	296,000	+ 16,000	2,768,000	2,695,000	+ 73,000
Total receipts ...	472,000	453,000	+ 19,000	4,178,000	4,083,000	+ 95,000
S.R. (2,153 mls.)						
Passenger-train traffic...	243,000	238,000	+ 5,000	2,234,000	2,148,000	+ 86,000
Merchandise, &c. ...	53,000	55,000	- 2,000	503,000	525,500	- 22,500
Coal and coke ...	26,000	25,000	+ 1,000	311,000	347,500	- 36,500
Goods-train traffic ...	79,000	80,000	- 1,000	814,000	873,000	- 59,000
Total receipts ...	322,000	318,000	+ 4,000	3,048,000	3,021,000	+ 27,000
Liverpool Overhead ...	1,147	1,025	+ 122	10,646	10,140	+ 506
(6½ mls.)						
Mersey (4½ mls.) ...	4,151	3,980	+ 171	37,994	36,784	+ 1,210
*London Passenger Transport Board ...	552,500	535,500	+ 17,000	20,118,800	19,525,200	+ 593,600
IRELAND						
†Belfast & C.D. pass. (80 mls.)	1,565	1,703	- 138	14,975	16,438	- 1,463
" " goods	597	669	- 72	4,545	5,140	- 595
" " total	2,162	2,372	- 210	19,520	21,578	- 2,058
Great Northern (543 mls.) pass.	8,850	8,800	+ 50	68,150	70,450	- 2,300
" " goods	9,850	9,650	+ 200	81,650	88,550	- 6,900
" " total	18,700	18,450	+ 250	149,800	159,000	- 9,200
Great Southern (2,075 mls.) pass.	29,848	29,761	+ 87	235,675	240,892	- 5,217
" " goods	44,668	46,397	- 1,729	376,194	373,882	+ 2,312
" " total	74,516	76,158	- 1,642	611,869	614,774	- 2,905

* 36th week.

† 10th week.

British and Irish Railway Stocks and Shares

Stocks	Highest 1936	Lowest 1936	Prices	
			Mar. 10, 1937	Rise/Fall
G.W.R.				
Cons. Ord. ...	64½	45½	57	-1½
5% Con. Prefce. ...	126½	116½	109½	-3½
5% Red. Pref. (1950) ...	113	108½	109½	—
4% Deb. ...	119½	110½	103	-2
4½% Deb. ...	121	114	108	—
4½% Deb. ...	129	121	113½	-1
5% Deb. ...	141	134	124½	-3
2½% Deb. ...	79½	74	65½	-4
5% Rt. Charge ...	136½	130	120½	-2
5% Cons. Guar. ...	135½	127½	118½	-2
L.M.S.R.				
Ord. ...	35½	17	28	-1
4% Prefce. (1923) ...	83	52½	72	-3
4% Prefce. ...	92½	81	81	-1½
5% Red. Pref. (1955) ...	109½	103½	103½	—
4% Deb. ...	111½	105½	101	-1½
5% Red. Deb. (1952) ...	119½	115½	113½	—
4% Guar. ...	106½	101½	98	-1
L.N.E.R.				
5% Pref. Ord. ...	14	9	9½	-½
Def. Ord. ...	7½	4½	5	—
4% First Prefce. ...	79½	55½	67*	-3
4% Second Prefce. ...	317½	18½	22*	-½
5% Red. Pref. (1955) ...	100½	77½	94½*	-1
4% First Guar. ...	104½	98½	93	-1½
4% Second Guar. ...	99	90	87	-1½
3% Deb. ...	85½	79	75½	-1
4% Deb. ...	109½	104½	100	-2
5% Red. Deb. (1947) ...	116½	110½	109½	—
4½% Sinking Fund Red. Deb.	111½	107½	106½	—
SOUTHERN				
Pref. Ord. ...	98½	82½	88	-1½
Def. Ord. ...	27½	20½	22½	-½
5% Pref. ...	120½	118½	107½	-4
5% Red. Pref. (1964) ...	119½	115½	111½	—
5% Guar. Prefce. ...	136	129½	119½*	-1
5% Red. Guar. Pref. (1957) ...	120	115½	112½*	—
4% Deb. ...	117½	109½	102½	-2
5% Deb. ...	140	134	124½	-1
4% Red. Deb. 1962-67	116½	110	107	-1
BELFAST & C.D.				
Ord. ...	9	4½	5	—
FORTH BRIDGE				
4% Deb. ...	107	105	102½	—
4% Guar. ...	107½	104	100½	—
G. NORTHERN (IRELAND)				
Ord. ...	19½	9½	10	—
G. SOUTHERN (IRELAND)				
Ord. ...	63	41	48½	+½
Prefce. ...	65	46	57½	-1
Guar. ...	97½	81	80	-1
Deb. ...	99½	83½	91½	-2
L.P.T.B.				
4½% "A" ...	127½	121	112½	-2
5% "A" ...	138½	133½	124½	—
4½% "T.F.A." ...	111½	108½	105	—
5% "B" ...	131½	123½	119½	-2
"C" ...	112½	93	90	—
MERSEY				
Ord. ...	40½	23	35½	—
4% Perp. Deb. ...	103	98	99	—
3% Perp. Deb. ...	78	74½	75½	—
3% Perp. Prefce. ...	68½	63½	64½	—

* ex dividend

CONTRACTS AND TENDERS

The Becco Engineering & Chemical Co. Ltd. has received an order from the L.N.E.R. for a 7,500 gall. water softening plant required for installation at Colchester.

First of L.N.E.R. Manchester-Sheffield Electrification Scheme Contracts

Henry Lees & Co. Ltd. has received an order from the L.N.E.R. for one 250-ton mechanical double-bunker, skip hoist coaling plant with anti-breakage device for installation at the new locomotive running shed to be constructed at Darnall, Sheffield. This contract is the first to be placed by the L.N.E.R. in connection with the £2,500,000 scheme which involves the electrification of the lines between Manchester, Sheffield, and Wath. One of the most interesting features of the electrification scheme is this new locomotive running shed which will be the first in the country to be equipped for dealing with both steam and electric locomotives, and will serve the eastern terminal of the electrified lines where the change-over from steam to electricity and *vice versa* will be made. This shed which will be responsible for the maintenance of all electric locomotives working from the Sheffield end together with the steam locomotives working southwards and eastwards, including the steam locomotives at present stabled at Neepsden depot, will be of interest to engineers not only by reason of the fact that it will combine the two forms of motive power, but also because of the up-to-date equipment which is to be provided. It will be equipped with a 70-ft. articulated turntable, a water tank with capacity of 100,000 gallons and all the latest mechanical appliances. To avoid occupation of the running lines by light engines, either steam or electric, passing to the shed from Sheffield station, a "fly-over" line is also to be constructed. In the meantime, there is great activity in the drawing offices at King's Cross where specifications for the electrical equipment required for the electrification of the 293 miles of line involved are being hurried forward and when these are completed a start on the constructional work will be made.

Ransomes & Rapier Limited is responsible for the design of a large number of six-ton mobile cranes which are being constructed in France for the French railways.

The Drewry Car Co. Ltd. has received a repeat order from the Takai Assam Tea Company for one diesel locomotive similar to that supplied to the same company about 18 months ago. The Drewry Car Co. Ltd. has also received an order for a diesel locomotive required for the Cornwall County Council.

Isca Foundry Limited has received an order from the Bhavnagar State Railway Administration, to the inspection of Messrs. Robert White & Partners

for 66 sets of points and crossings for 41½-lb. F.B. rails and six sets of points and crossings for 50-lb. B.S. old standard F.B. rails.

S. A. Gilsoco has received orders, from the Bhavnagar State Railway Administration, to the inspection of Messrs. Robert White & Partners, for five and a half tons of bolts, nuts and spring-washers and 99½ tons of dogspikes for 41½-lb. F.B. rails.

L.N.E.R. Wagon Orders

The L.N.E.R. has recently placed the following orders for a total of 4,750 wagons:—

R. Y. Pickering & Co. Ltd., 1,000 12-ton open wagons and 100 20-ton plate wagons.
Birmingham Railway Carriage & Wagon Co. Ltd., 1,000 12-ton open wagons.

Charles Roberts & Co. Ltd., 750 12-ton open wagons.
Hurst, Nelson & Co. Ltd., 300 12-ton open wagons.

W. H. Davis, 250 12-ton open wagons.
William Rigley & Sons, Ltd., 200 12-ton open wagons.

Metropolitan-Cammell Carriage & Wagon Co. Ltd., 500 12-ton covered goods wagons and 500 20-ton plate wagons.

Cravens Railway Carriage & Wagon Co. Ltd., 500 12-ton covered goods wagons and 250 20-ton plate wagons.

G. R. Turner Limited, 100 20-ton plate wagons.

Cambrian Wagon Company, 50 20-ton plate wagons.

R. A. Lister & Co. Ltd. has received an order from the Buenos Ayres Great Southern Railway for 21 Lister diesel engines.

W. Simons & Co. Ltd. has received an order from the L.M.S.R. for a bucket hopper dredger for use in Ayr Harbour.

The Government of India, Railway Department (Railway Board) has placed the following wagon orders in connection with the 1937-38 requirements:—

Braithwaite & Co., type BVG: 21 for East Indian, 26 for Eastern Bengal, and 40 for North Western Railways, and type CE: six for Madras & Southern Mahratta Railway.

Burn & Co., type MB Tox: one for Madras & Southern Mahratta Railway and six for Bombay, Baroda & Central India Railway.

Jessop & Co., type TM: one for Madras & Southern Mahratta Railway.

Guest, Keen & Nettlefolds Limited has received an order from the United Railways of Havana Limited for 25,000 fishbolts and nuts.

The Glasgow Railway Engineering Co. Ltd. has received an order from the Bengal-Nagpur Railway for 60 pairs of 2-ft. 6-in.-gauge wheels and axles.

Stewarts and Lloyds Limited has received an order from the Central Argentine Railway for 700 solid-drawn galvanised steel superheater smoke tubes and 10,000 solid-drawn steel boiler-tube safe ends.

C. & H. Crichton (1921) Limited has received an order from the Nyasaland

Railways for a motor towing launch to be driven by a Gleniffer 48-h.p. diesel engine.

Tenders are invited by the Bengal-Nagpur Railway, receivable at 132, Gresham House, Old Broad Street, London, E.C.2, by March 19, for the supply of 300 short and 2,000 long forged steel buffer cases.

Forthcoming Events

Mar. 12 (Fri.).—Mansion House Association on Transport, at Trocadero Restaurant, Piccadilly Circus, London, W.1, 1.15 p.m. Luncheon and Annual Meeting.

Railway Convalescent Homes, at Wharfedale Rooms, Hotel Great Central, Marylebone, London, N.W.1, 6.15 for 6.45 p.m. Banquet.

Mar. 13 (Sat.).—Stephenson Locomotive Society (Midlands-Northern), at 4, Bury Old Road, Manchester, 6.30 p.m. "Locomotives of the Western Section of the Southern Railway," by Mr. H. Kilpin.

Mar. 15 (Mon.).—G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, Snow Hill Station, 6.30 p.m. Annual General Meeting.

Institute of Transport (Scottish), at North British Station Hotel, Princes Street, Edinburgh, 7.15 p.m. "Accidents and Third Party Claims," by Mr. J. Clark. "The Handling of 'Smalls' Traffic in Cities," by Mr. R. Laird. "Variations in Ships' Register Tonnage and the Effect on Dock Dues, etc.," by Mr. J. Tennant.

Mar. 16 (Tues.).—Institute of Transport (Birmingham Graduate) at Imperial Hotel, 6.30 p.m. "The Trader's Transport Department and its Operation," by Mr. G. Stonehewer.

Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "The Place of Touring in a National Scheme of Transport," by Mr. C. Davies.

L.N.E.R. (York) Lecture and Debating Society, at Railway Inst., Queen Street, 6.45 p.m. "An Outline of the Functions of the Ministry of Transport," by Mr. A. Kirkus.

Retired Railway Officers' Society, at Great Eastern Hotel, Liverpool Street, London, E.C.2, 12.45 for 1 p.m. Spring Luncheon.

Mar. 17 (Wed.).—Great Eastern A.A.A., at Stadium Club, 85, High Holborn, London, W.C.1, 7 p.m. Annual Boxing Championships.

Institute of Transport (Manchester-Liverpool Graduate), at Exchange Station Hotel, Liverpool, 6.30 p.m. "Parties and Extra Vehicles by Passenger Train," by Mr. F. Foulds.

Institute of Welding (Manchester), at College of Technology, 7.30 p.m. "Testing of Welds," by Mr. H. Pemberton.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "A Survey of the Programme of the Institution Research Committee," by Mr. A. Naylor.

Institution of Electrical Engineers (Mersey), at The Temple, Dale Street, Liverpool, 6.30 p.m. "Direct Current Electric Traction," by Mr. R. Knight.

Royal Society of Arts, John Street, London, W.C.2, 8.15 p.m. "Displacement of Labour by Machinery," by Mr. H. Henderson.

Mar. 18 (Thurs.).—G.W.R. (London) Lecture and Debating Society, in General Meeting Room, Paddington Station, W.2, 5.45 p.m. Annual General Meeting.

Institute of Metals (London), at Society of Motor Manufacturers, 83, Pall Mall, S.W.1, 7.30 p.m. "Refractories," by Mr. J. Partridge.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6.30 p.m. Joint Meeting with Inst. of Structural Engineers. "The New German Railway Bridges," by Dr. Ing. Schaper.

Institution of Locomotive Engineers (Scottish), at Royal Technical College, George Street, Glasgow, 7.30 p.m. "Opto-mechanical Methods of Lining Up Locomotive Frames," by Mr. J. Scott.

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.
Road and Rail Traffic Act, 1933.

Agreed Charges.

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule

hereto, have been lodged with the Railway Rates Tribunal.

The Procedure to be followed in regard to the inspection of the said Applications and the filing of Notices of Objections is that published in the "London Gazette" of 28th July, 1936.

Printed copies of the Procedure can be obtained from the Railway Rates Tribunal, Bush House, Aldwych, London, W.C.2.

Notices of Objection to any of the said

Applications must be filed on or before the 31st day of March, 1937.

A copy of each Application can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s. post free.

T. J. D. ATKINSON,
Registrar.

5th March, 1937.

Number of Application	Name of Trader and General Description of Traffic	Number of Application	Name of Trader and General Description of Traffic
1937— No. 121	GRATTAN WAREHOUSES LIMITED, Ingleby Road, Bradford, Yorks; Clothing, Drapery and General Stores Wares.	1937— No. 148	WINDSOR WORKS LIMITED, Venn Street, Clapham Common, London, S.W.4; Drapery, Haberdashery, Druggists' Sundries, Electric Lamps and Bulbs; Gas Mantles, etc.
1937— No. 122	ISMAY DISTRIBUTORS LIMITED, Sterling Works, Dagenham, Essex; Electrical Appliances, Neon and Tubular Electric Signs, Wireless Apparatus, etc. (Applicable also to traffic consigned by four Associated or Subsidiary Companies.)	1937— No. 149	SIR JOSEPH CAUSTON & SONS LTD., Eastleigh, Hants; Advertising and Printed Matter and Stationery.
1937— No. 123	THE CO-OPERATIVE WHOLESALE SOCIETY LIMITED, 1, Balloon Street, Manchester; Preserves, Cheese, Potato Crisps, Cooked Meat, Sausages, Meat Pies, etc.	1937— No. 150	FISHER, CLARK & CO. LTD., Boston, Lincolnshire; Labels, Tickets and Post Cards.
1937— No. 125	ASHWORTH (SPECIALITIES) LIMITED, Pure Food Factory, Shirley, Birmingham; Breadcrumbs, Suet, Stuffing and Sausage Skins.	1937— No. 151	LISTER & CO. LTD., Attleborough Mills, Nuneaton; Mats, Rugs and Table Covers.
1937— No. 126	THE CRIMONY CO. LTD., Heath Road, Twickenham, Middlesex; Confectionery, Preserves, Almonds, Dripping, Spice, Sugar, etc.	1937— No. 152	MITCHELL, WALKER & CO., Clyde Works, Ingram Road, Leeds, 11; Clothing.
1937— No. 127	FACCHINO'S PURITY BISCUITS LIMITED, Purity Works, Old Bromford Lane, Ward End, Birmingham, 8; Biscuits, etc.	1937— No. 153	M. TEMPEST & SONS, 41, Peel Place, Leeds Road, Bradford, Yorks; Woollen Goods.
1937— No. 128	G. W. GOODWIN & SON, Ordsall Lane, Manchester; Soap.	1937— No. 154	WHITELEY ELECTRICAL RADIO CO. LTD., Victoria Street, Mansfield; Wireless Component Parts.
1937— No. 129	L. HARWOOD & CO. LTD., Brearley, Luddendenfoot, Yorks; Blankets.	1937— No. 155	APLIN & BARRETT LIMITED, Yeovil; Butter, Cheese, Cream, Cooked and Preserved Meat, etc. (Applicable also to traffic consigned by one Associated or Subsidiary Company.)
1937— No. 130	JOHN HAWLEY & CO. (WALSALL) LTD., Goodall Works, Bloxwich Road, Walsall, Staffs; Tents, Garden Furniture, Rubber Goods, Hardware, Saddlers' Sundries, etc.	1937— No. 156	B. BERWIN LIMITED, Berbourne House, Roseville Road, Leeds; Clothing.
1937— No. 131	J. C. LEY & SONS LTD., Canterbury Road Mills, Old Radford, Nottingham; Waste, Bags, Textiles, Sponge Cloths, etc.	1937— No. 157	BRADFORD TEXTILE CO. LTD., St. Blaize Works, Snowden Street, Bradford, Yorks; Clothing and Caps.
1937— No. 132	QUANTOCK PRESERVING CO. LTD., Bridgwater, Somerset; Confectionery, Preserves and Peel.	1937— No. 158	BROWN & HAIGH, Wood Street Mills, Wigan; Cloth and Clothing.
1937— No. 133	J. ROGALL & SON LTD., Spark Street Mills, Leeds, 3; Confectionery.	1937— No. 159	BUTLER SERVICES LIMITED, Dockfield Road, Shipley; Clothing, Drapery and General Stores Wares.
1937— No. 134	JOSEPH W. WHITWORTH LIMITED, Longbottom Mills, Luddendenfoot, Yorks; Blankets and Cloth.	1937— No. 160	FULLERS LIMITED, Hammersmith, London, W.6; Cakes, Confectionery, Preserves, Sugar and Cigarettes, etc.
1937— No. 135	BRAND & CO. LTD., Mayfair Works, Vauxhall, London, S.W.8; Groceries, Preserves, Provisions, etc.	1937— No. 161	GERRISH, AMES & SIMPKINS LIMITED, Carlington Works, 129, 131 and 133, Mare Street, Hackney, London, E.8; Clothing, etc. (Applicable also to traffic consigned by one Associated or Subsidiary Company.)
1937— No. 136	THE EVER READY CO. (GREAT BRITAIN) LTD., Hercules Place, Holloway, London, N.7; Accumulators and Accumulator Parts, Batteries, Electric Lamps and Torches, etc.	1937— No. 162	HOWARD FORD & CO. LTD., Russell Buildings, School Lane, Liverpool; Hosiery.
1937— No. 137	THOMAS HEDLEY & CO. LTD., Phoenix Buildings, Collingwood Street, Newcastle-on-Tyne; Candles, Soap, etc.	1937— No. 163	THE KETTERING CLOTHING MANUFACTURING CO-OPERATIVE SOCIETY LIMITED, Dryden Street, Kettering; Clothing.
1937— No. 138	LAWLEY LIMITED, 36, Golden Square, London, W.1; China Glassware, Hardware, Leather and Fanny Goods, Clocks and Watches, Plate and Cutlery, etc.	1937— No. 164	S. MORRIS & CO. (CLOTHIERS) LTD., Sydnor Works, Crimble Street, Leeds, 7; Clothing.
1937— No. 139	ANDREW LEVY & CO. LTD., Bowershall Mills, 79, Bonnington Road, Leith; Stationery.	1937— No. 165	JOHN NOBLE LIMITED, Brook Street, Manchester, 1; Clothing, Drapery and General Stores Wares.
1937— No. 140	W. W. OSGERBY LIMITED, Hedon Road, Hull; Bath Salts, Cleansing Powder, Dry Soap and Lavatory Cleanser.	1937— No. 166	EDWARD PARSONS & SON LTD., The Farmhouse, Irchester Village, Wellingborough; Meat Pies, Preserved Provisions and Sausages.
1937— No. 141	HARRY PECK & CO. LTD., 8, Devonshire Grove, Old Kent Road, London, S.E.15; Preserves and Provisions, etc.	1937— No. 167	POOL, LORRIMER & TABBERER LIMITED, Leicester; Hosiery.
1937— No. 142	BENJAMIN RUSSELL & SONS LTD., Eastern Boulevard, Leicester; Hosiery, Woollen and Worsted Yarn.	1937— No. 168	S. SCHNEIDERS & SON LTD., Durward Street, London, E.1; Clothing, etc.
1937— No. 143	A. SANDERSON & CO. LTD., Kingston Colour, Paint and Varnish Works, Hull; Decorators' Supplies.	1937— No. 169	"TWO STEEPLES" LIMITED, Wigston; Woollen Goods.
1937— No. 144	S. SCHNEIDERS & SON LTD., Durward Street, London, E.1; Clothing, etc.	1937— No. 170	BUSCHER & HASELER LIMITED, Branton Street, Birmingham, 15; Aluminium Ware, Enamelled Ware, Hardware, Holloware, Metal Pressings, Spinnings and Stampings, Springs, etc.
1937— No. 145	SCOTT & TURNER LIMITED, Gallowgate, Newcastle-on-Tyne; Sallies, Baking Powder, Cake Flour, Gravy Salt, Jellies, Medicines, etc.	1937— No. 171	F. PLUCK, Dodnash, Thoroughgood Road, Clacton-on-Sea; Leaf Mould, Potting Soil, Sand, Manure, Compost and Wood Ash.
1937— No. 146	JOHN SHARP, Highfield Mill, Cleckheaton; Stitching Wire.	1937— No. 172	WILLESSEN WALLPAPER MANUFACTURING CO. LTD., Long Drive, Birkbeck Avenue, Greenford, Middlesex; Paper Hangings.
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		1937— No. 175	JOHN SMEDLEY LIMITED, Lea Mills, Near Matlock, Derbyshire; Hosiery, Yarn, etc.
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Bengal-Nagpur Railway Company
Limited

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300 SHORT AND 2,000 LONG FORGED STEEL BUFFER CASES.

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A fee of 10s. will be charged for each copy of the Specification, which is NOT returnable. Tenders must be submitted not later than Noon on Friday, 19th March, 1937.

The Directors do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right of reducing or dividing the order.

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T. R. WYNNE,
Managing Director.

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Railway Share Market

Having regard to the tendency to lower prices in the stock and share markets this week, it is hardly surprising Home railway stocks have failed to show recovery. There is a fairly general disposition at the moment not to add to commitments until uncertainty regarding the provisions of the Budget is removed.

Although the traffic figures were again quite good, they were apparently below some expectations in the market, and had very little influence on prices. L.M.S.R. ordinary remained fairly steady at 28½ on Wednesday on satisfaction with the £32,000 traffic increase for the past week, but the 1923 preference continued to be reactionary. L.N.E.R. first preference was fractionally lower at 66½ despite the good yield offered. But the second preference and preferred and deferred

stocks were rather steadier than of late. It is being suggested in some quarters that they seem moderately valued, having regard to the possibility that traffic may make a very good showing as time proceeds, in view of the increasing activity in the heavy industries of the North-East Coast area. Great Western was sold, apparently on some disappointment with the traffic for the past week, although, as in the case of the L.N.E.R., they show an increase of £19,000. Southern deferred continued rather out of favour (last week's traffic gain was £4,000), but there was a firmer tendency in the preferred. Southern 4 per cent. debentures lost a point to 107. London Transport "C" was again reactionary, and has now declined to 90. Foreign railway stocks were affected by

surrounding market conditions and were moderately lower in price. Central Argentine ordinary was relatively steady at 33, aided by the excellent increase in the traffic return, and B.A. Pacific at 14½ and B.A. Gt. Southern at 34 were only fractionally lower on balance, sentiment having also been influenced by the good traffic reported by these railways. B.A. Gt. Southern 5 per cent. preference was higher at 81. Entre Rios 4 per cent. debentures made the higher price of 75½ on the decision to pay one year's arrear of interest. Argentine Transandine "B" debentures were marked up two points to 69. Elsewhere, San Paulo reacted a point to 95½, but Leopoldina 4 per cent. debentures were better. Nitrate Rails and Antofagasta were steadier after an early decline.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1936-37	Week Ending	Traffics for Week		No. of Weeks	Aggregate Traffics to Date			Shares or Stock	Prices						
			Total this year	Inc. or Dec. compared with 1936		Totals		Increase or Decrease		Highest 1936	Lowest 1936	Mar. 10, 1937	Yield % (See Note)			
						This Year	Last Year									
South & Central America.	Antofagasta (Chili) & Bolivia	834	7.3.37	18,100	+	4,410	10	153,790	138,440	+	15,350	Ord. Stk.	25	151½	26	Nil
	Argentine North Eastern	753	6.3.37	7,463	+	195	36	315,538	280,260	+	35,278	A. Deb.	12	2	14½	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	—	—	54	45	93	4½	Nil
	Bolivar	174	Feb., 1937	5,700	—	950	9	11,100	12,150	—	1,050	6 p.c. Deb.	9	8	82½	Nil
	Brazil	—	—	—	—	—	—	—	—	—	—	16	11½	16½	3	Nil
	Buenos Ayres & Pacific	2,806	6.3.37	124,256	+	23,316	36	3,160,403	2,898,044	+	262,359	Ord. Stk.	17½	6	14½	Nil
	Buenos Ayres Central	190	20.2.37	\$141,700	+	\$49,800	34	\$4,922,800	\$3,933,800	+	\$989,000	Mt. Deb.	31½	11	39½	Nil
	Buenos Ayres Gt. Southern	5,084	6.3.37	226,799	+	63,697	36	5,207,214	4,661,320	+	545,894	Ord. Stk.	315½	13½	24½	Nil
	Buenos Ayres Western	1,930	6.3.37	56,079	+	7,665	36	1,718,005	1,586,218	+	131,787	"	295½	11	30½	Nil
	Central Argentine	3,700	6.3.37	187,029	+	76,700	36	5,418,160	4,359,970	+	1,058,190	"	329½	8½	33	Nil
	Do.	—	—	—	—	—	—	—	—	—	—	21	4½	17½	Nil	
	Cent. Uruguay of M. Video	273	27.2.37	13,302	+	1,816	35	435,223	372,076	+	63,197	Ord. Stk.	75½	3	14	Nil
	Do. Eastern Extn.	311	27.2.37	2,651	+	111	35	79,418	69,702	+	9,716	"	—	—	—	—
	Do. Northern Extn.	185	27.2.37	1,752	+	148	35	54,920	49,019	+	5,901	"	—	—	—	—
	Do. Western Extn.	211	27.2.37	1,100	+	45	35	36,953	30,943	+	6,010	"	—	—	—	—
	Cordoba Central	1,218	6.3.37	29,160	+	5,600	36	1,148,440	1,034,790	+	113,650	Ord. Inc.	5	1	5½	Nil
	Costa Rica	188	Dec., 1936	19,353	+	7,331	26	110,934	80,721	+	30,213	Stk.	36½	32	37	5½
	Dorada	70	Jan., 1937	15,300	+	2,000	5	15,300	13,300	+	2,000	1 Mt. Db.	107	101½	104½	5½
	Entre Rios	810	6.3.37	12,363	+	2,739	36	472,218	398,758	+	73,460	Ord. Stk.	17	8	18	Nil
	Great Western of Brazil	1,032	6.3.37	8,700	+	1,100	10	86,400	98,900	—	12,500	Ord. Sh.	1½	3½	3½	Nil
	International of Cl. Amer.	794	Jan., 1937	\$516,579	+	\$15,044	5	\$516,579	\$501,535	+	\$15,044	"	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	La Guaira & Caracas	22½	Feb., 1937	4,925	+	700	9	11,195	8,650	+	2,545	1st Pref.	1½	—/8	1½	Nil
	Leopoldina	1,918	6.3.37	23,413	+	7,142	10	208,946	175,214	+	33,732	Ord. Stk.	10½	3½	7½	Nil
	Mexican	483	28.2.37	\$351,700	+	\$38,000	9	\$2,587,400	\$2,152,400	+	\$435,000	"	114	14	1	Nil
	Midland of Uruguay	319	Jan., 1937	10,650	+	1,100	31	60,730	48,565	+	11,865	"	11½	1	1	Nil
	Nitrate	397	28.2.37	8,961	+	3,068	9	29,791	29,354	+	437	Ord. Sh.	63½	41/9	21½	Nil
	Paraguay Central	274	6.3.37	\$2,801,000	+	\$275,000	36	\$95,626,000	\$80,781,000	+	\$14,845,000	Pr. Li. Stk.	85	71	81	7
	Peruvian Corporation	1,059	Feb., 1937	74,301	+	4,339	35	614,887	616,056	+	28,831	Pref.	15	9	13½	Nil
	Salvador	100	27.2.37	\$46,250	+	\$14,550	35	\$729,258	\$641,596	+	\$87,662	Pr. Li. Db.	18	16	22½	Nil
	San Paulo	153½	28.2.37	33,750	+	10,954	9	255,069	244,309	+	10,760	Ord. Sh.	86	46½	96½	29½
	Taitai	164	Feb., 1937	3,440	+	1,130	35	27,930	28,485	—	555	Ord. Sh.	115½	14/-	14	8
	United of Havana	1,353	6.3.37	71,217	+	25,653	36	797,439	736,348	+	61,091	Ord. Stk.	31½	1	4½	Nil
	Uruguay Northern	73	Jan., 1937	1,032	+	138	31	7,529	5,724	+	1,805	Deb. Stk.	5	3	9	Nil
Canada.	Canadian National	23,564	28.2.37	805,707	+	28,315	9	5,689,041	5,161,812	+	507,229	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Grand Trunk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Canadian Pacific	17,223	28.2.37	526,400	—	18,600	9	3,983,600	3,720,800	+	262,800	Perp. Dbs. 4 p.c. Gar. Ord. Stk.	76 104½ 16½	51 99½ 105½	70½ 96½ 17	51½ 96½ 4
India.	Assam Bengal	1,329	10.2.37	39,060	—	155	45	1,193,845	1,130,730	+	63,115	Ord. Stk.	87½	82½	75½	4
	Barsi Light	202	10.2.37	2,295	—	1,732	44	98,332	123,592	—	25,260	Ord. Sh.	77½	65½	60	85½
	Bengal & North Western	2,107	10.2.37	90,003	—	6,978	19	1,126,538	1,086,990	+	39,548	Ord. Stk.	319	292½	315	51½
	Bengal Doonars & Extension	161	20.2.37	3,287	—	665	45	117,927	126,224	—	8,297	"	127½	118	104½	5½
	Bengal-Nagpur	3,268	20.2.37	191,400	—	8,508	45	5,360,709	5,726,535	—	365,826	"	104	100½	96½	4½
	Bombay, Baroda & Cl. India	3,072	28.2.37	217,950	—	37,425	46	8,024,025	7,574,850	+	449,175	"	114	110½	111½	5½
	Madras & Southern Mahratta	3,229	10.2.37	161,400	+	1,471	44	4,821,668	4,627,182	+	194,486	"	116½	108½	106½	7½
	Rohilkund & Kumaon	572	20.2.37	20,383	+	208	19	222,017	212,387	+	9,630	"	311	286	314	5½
	South Indian	2,532	10.2.37	110,000	+	1,996	44	3,458,709	3,391,966	+	66,743	"	107½	102½	101½	57½
Various	Belra-Umtali	204	Dec., 1936	60,774	+	5,507	13	206,068	193,193	+	12,875	—	—	—	—	—
	Bilbao River & Cantabrian	15	Jan., 1937	1,036	—	282	5	1,036	—	—	282	—	—	—	—	—
	Egyptian Delta	620	20.2.37	6,917	+	284	45	228,737	226,345	+	2,392	Pr. Sh.	21½	16½	15½	Nil
	Great Southern of Spain	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Kenya & Uganda	1,625	Jan., 1937	289,136	+	55,780	5	289,136	233,376	+	55,760	Inc. Deb.	11½	1½	3½	Nil
	Manila	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Mashonaland	913	Dec., 1936	128,131	+	28,800	13	373,680	313,033	+	60,647	B. Deb.	50½	37	46	79½
	Midland of W. Australia	277	Jan., 1937	12,814	—	2,014	31	94,868	98,451	—	3,583	1 Mt. Db.	101½	101½	107	41½
	Nigerian	1,905	16.1.37	81,232	+	26,288	42	1,895,659	1,468,902	+	426,757	Inc. Deb.	97	93½	96	4½
	Rhodesia	1,538	Dec., 1936	221,307	+	35,843	13	664,648	575,985	—	88,663	4 p.c. Db.	107	103½	109	31½
	South Africa	13,263	13.2.37	592,633	—	5,060	46	28,043,497	26,131,269	+	1,912,228	—	—	—	—	—
	Victoria	4,728	Nov., 1936	868,988	+	45,953	21	3,935,540	3,959,297	—	36,243	—	—	—	—	—
	Zafra & Huelva	112	Dec., 1936	16,027	+	5,302	52	113,343	134,754	—	21,411	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1%.

† Receipts are calculated @ 1s. 6d. to the rupee. ‡ ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rates of exchange and not on the par value.